DESIGN INTERVENTIONS FOR RE-CONCEPTUALISING SUSTAINABLE GRAPHIC DESIGN PRACTICES IN GHANA

by

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DECLARATION

I, **Ginn Bonsu Assibey**, hereby declare that the content of this thesis represents my own unaided work and that the thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology.

2nd December 2019

Signed

Date

ABSTRACT

This research explored and examined graphic design practices through the lens of the Sustainability Development Analytical Grid. The exploration was meant to discover how graphic design practices are carried out - from idea inception to the delivery stage of graphic design products - in a developing nation. The essence of the exploration was to understand how graphic designers make design decisions and the effects of these design decisions in the pre-press, press and post-press activities from a sustainability perspective. In the examination, the first task was to probe the identified graphic design practices using the selected sustainability framework, to ascertain what the challenges are to sustainability in graphic design practices. The second task was to explore sustainable, emerging-design interventions and match them to the identified challenges within the same graphic design community. This served as a means for re-conceptualising sustainable graphic design for purposes of best practice in a particular developing nation. This research, thus, advances that aside from the environmental dimension, the social and economic dimensions of sustainability are also integral parts of sustainability, and thus the holistic nature of sustainability should be recognised as such in sustainable graphic design.

In the research study, empathic, contextual and ethnographic human-centred approaches were deployed through the interpretivist paradigm. The selected human-centred approaches were used with the aid of an amalgamation of the Sustainability Development Analytical Grid and Activity Theory to examine graphic design practices from a graphic design production perspective. Qualitative research methods were used. The data-gathering tools used were participant observation, interviews and document reviews to interrogate the nature of graphic design practices, the challenges to sustainability and the emerging-design interventions used by some designers to counter the challenges to sustainability. The research site was Asafo, a suburb of Kumasi in Ghana. The selected samples were four graphic design firms, 30 graphic designers, 15 creative directors, 30 clients and 30 graphic design products, all were selected purposively.

The results revealed several challenges to sustainability in graphic design practices such as lack of knowledge on proper disposal of printing machine chemicals, poor choice of printing paper without environmental considerations and weak ethics in the promotion of unapproved graphic design packages for food products. On the other hand, there were local, emerging-design interventions within the same graphic design community developed by the designers that countered most of the challenges to sustainability. The local design interventions supported the concept of cosmopolitan localism that gives graphic designers room to develop solutions that are local but have global essence. The study proposes that the future

of holistic sustainable graphic design lies in local design interventions, implying that the developing nations have alternative solutions to their problems and must be allowed to develop their resilience through innovation.

IN-TEXT CITATION CONVENTIONS

Dates of publication and page numbers are provided for all authors whose ideas are quoted or paraphrased. Double quotation marks or indentations are used in the case of direct quotations. Exceptions to providing dates and page numbers are where the general focus of an author(s) is referred to or material sourced from the internet for which no dates or page numbers exist.

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DEDICATION

To Jehovah God for His provisions and to all designers who believe in cosmopolitan localism as a means for advancing the practice of sustainability.

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CHAPTER ONE

INTRODUCTION TO THE STUDY

1.0 Introduction

For the past decade, the practice of sustainability has been accepted by many disciplines in a bid to contribute towards the agenda of sustainable development. Many international sustainability programmes have also been initiated to serve as the vehicle to carry the agenda to guide institutions, firms and organisations on the appropriate path in confronting the challenges to sustainability (United Nations, 2018). Among these programmes are the Sustainable Development Goals (United Nations, 2018) and sustainable design policies by design associations. Irrespective of the numerous programmes that have sprung forth to advance the sustainability agenda, the United Nations' Secretary-General, António Gutterres advances that "…without evidence of where we stand now, we cannot confidently chart our path forward in realizing the Sustainable Development Goals" (United Nations, 2018:3).

The despair expressed by António Gutterres is also shared by other researchers in the practice of sustainability in graphic design. Among such researchers are Benson and Napier (2012:207) who complain that after four years of further experiments in teaching sustainability to communication designers they have recognized that communication designers are zealous about their own social causes and as long as they have steady jobs after graduation, learning about sustainability was not vital to their course. On a similar path, Dritz (2014) concluded in her research into gaps in the practice of sustainability in graphic design that most graphic designers were not engaged in practising sustainability. Dritz (2014) further pinpointed that the challenges identified were as a result of lack of adequate information on sustainability and its support structures emanating from vague and narrow sustainable graphic design definitions, which made it difficult for clients to identify with the value of sustainability. The findings by Dritz (2014) and Benson and Napier (2012:207) indicate that the practice of sustainable graphic design is still at the base of the ladder of the sustainability agenda irrespective of the various strategies proposed by researchers such as Ceschin and Gaziulusoy (2016:141).

The general overview regarding sustainability engagement expressed by António Gutterres (United Nations, 2018:3) and the submissions by Benson and Napier (2012:207) and Dritz (2014) towards sustainable graphic design shows that much has not been achieved. Academically, these submissions need further interrogation, which necessitated the need for a search regarding various exploratory and assessment models for sustainable graphic design practices to ascertain their relationship with the various research outcomes by Dritz (2014), Benson and Napier (2012) and Benson (2007), but no established theoretical or

assessment models regarding sustainability were identified in their research. However, some skewed strategies regarding environmental sustainability were discovered in their studies. The major approaches found were green design, eco-design, cradle-to-cradle and bio-mimicry, which are also advanced by Ceschin and Gaziulusoy (2016:139). All these approaches were environmentally biased with no tentacles that cover societal and economic dimensions of sustainability. This implies that their research outcomes on challenges to sustainability in graphic design practices from a holistic sustainability perspective do not have a firm theoretical base and as such cannot be used as a platform to advance holistic sustainable graphic design solutions, especially in a developing nation's context.

The lack of a holistic sustainability framework in the sustainable graphic design studies by Dritz (2014), Benson and Napier (2012) and Benson (2007), justifies that sustainable graphic design has been underexplored and that most of their submissions are in favour of environmental consciousness. Moreover, according to Manzini (2007:27), the concept of environmental consciousness that led to the creation and promotion of eco-efficient products for attaining sustainability has proved to be unsuccessful due to overconsumption leading to boomerang effects. Manzini (2007:27), therefore, made a recommendation that for sustainability to be achieved there should be an add-on of human-centred approaches to eco-efficient approaches, which has already started through social innovations for the attainment of holistic sustainability. However, it is unclear how researchers and graphic designers could initiate this holistic sustainability approach in graphic design practices. Further to this, there is limited knowledge regarding sustainable graphic design practices in a developing African nation's context due to limited literature concerning graphic design and sustainability, making it difficult to know where to start from.

This study, therefore, attempts to fill the gaps in the research works by Dritz (2014), Benson and Napier (2012) and Benson (2007), which do not address holistic sustainability in graphic design practices. This research thus advances that aside from the environmental consciousness dimension, the societal and the economic dimensions of sustainability are also integral parts of sustainability and the holistic nature of sustainability should be recognised as such. This research, therefore, attempts to use a sustainability framework that addresses all the dimensions of sustainability, especially in a developing nation, where the vast majority of humanity subsists often due to similar challenges albeit from very unique social, cultural or political sources (M'rithaa & Futerman, 2007:3) by exploring and examining graphic design practices to set the platform for advancing sustainability in the graphic design profession.

1.1 Research problem in context

Different ways of practising sustainability in graphic design have been outlined, but almost all the approaches address environmental concerns with little or no interest shown in the social and economic dimensions by researchers such as Dritz (2014) and Benson and Napier (2012). Moreover, there is very little literature regarding developing nations, particularly in the African context, concerning sustainable graphic design practices. Suggestions have been made for graphic designers to engage in the holistic practice of sustainability by adding up human-centred approaches. However, it is unclear how researchers and graphic designers could initiate this holistic approach with no knowledge of graphic design practices in a developing nation.

1.2 Aim of the research

The aim of this research is to explore and examine graphic design practices to uncover the challenges and solutions to sustainability from a localised developing nation using an established sustainability framework. The exploration is meant to uncover how graphic designers in a developing nation carry out their practices from idea inception to packaging of the graphic design product. The essence of the exploration is to understand how graphic designers make design decisions and the effects of the design decision in the pre-press, press and the post-press from sustainability perspectives based on how they carry out their activities. In this examination, the first task is to probe into the uncovered graphic design practices using the selected sustainability framework to bring out the challenges to sustainability in graphic design practices. The second task is to match up the emerging design intervention solutions to the identified challenges within the same graphic design community to serve as a means for re-conceptualising sustainable graphic design for purposes of best practice in the developing nation.

1.3 Research questions

The main research question driving the study is: How can design researchers and graphic designers initiate the shift towards holistic sustainability in graphic design practices in a developing nation? The sub-questions are:

1. How are graphic design practices carried out in a developing African nation from a holistic sustainability perspective?
2. What are the emerging-design interventions developed to counter the challenges to sustainability in graphic design practices?
3. How can the emerging-design interventions be used for re-conceptualisation of sustainable graphic design practices?

1.4 Research objectives

The main objective of this study is to initiate the shift towards holistic sustainability in graphic design practices in a developing nation's context through human-centred approaches and cosmopolitan localism design interventions. This will be achieved by:

1. Discovering how graphic design practices are carried out in a developing nation from a holistic sustainability perspective;
2. Examining the graphic design practices through the lens of sustainability to uncover associated challenges to sustainability;
3. Exploring graphic design practices to uncover emerging-design interventions developed to counter the challenges to sustainability in graphic design practices; and
4. Re-conceptualising sustainable graphic design practices from a developing nation.

1.5 Basic assumptions

The study assumes that the connection between graphic design and sustainability has not been well established due to design researchers and graphic design practitioners' inability to recognise that sustainable graphic design is not limited to only "green design" (Mitchell, 2012). The study thus assumes that sustainable graphic design practices have been underexplored due to the lack of a comprehensive sustainability framework that could be leveraged to explore the three domains of sustainability. The outcome from the usage of a comprehensive sustainability framework could advance the discourse on sustainability and graphic design practices especially in a developing nation's context. In this manner, the state of graphic design and sustainability can be well established holistically to serve as a platform that researchers and graphic design practitioners can use to contribute to the sustainable development agenda.

1.6 Delineation of the study

The study is limited to exploring and examining the pragmatic (graphic design production and graphic design product effect on the audience) component of graphic design practices only. It does not touch on the semantic and the rhetoric components, which have their roots in meanings, constructivism and persuasion in graphic design. It uses Activity Theory and the Sustainability Development Analytical Grid frameworks as the lenses for the exploration and the examination of the graphic design practices. It samples graphic designers, clients and creative directors at Asafo a suburb of Kumasi, the second-largest city in Ghana for the study. The results are not quantified statistically because the focus of the research is to unearth in-depth data from a pattern perspective and interpret the data using the Activity Theory and the Sustainability Development Analytical Grid.

1.7 Background to the study

About five decades ago, Meadows, Meadows, Randers and William (1972:23) predicted that if the growth trend in the world population, industrialisation, pollution, food production and resource depletion continue unchanged, within hundred years, the limit of the planet [may] be reached. Thirty-five years later, Manzini (2007:5) raised similar concerns about the limits of our planet which had become clear and needed to be attended to with urgency through *decoupling* to slow the growth of the limit. Dougherty (2008:24) also reiterates similar sentiments and argues that there is an overconsumption of the earth's resources annually, which incapacitates its production systems. Sustainability was therefore introduced along with *The Limit of Growth* in 1972 by Meadows et al. (1972:23) and properly defined in 1987 at Oslo in *Our Common Futures* report to incite and facilitate a mass movement participation in ensuring standard well-being for all humans and for the natural world around us (United Nations, 1987:iii).

But Reed (2006:3) through a literature survey noticed that the reactions to this challenge had been slow, fragmented and insufficient. This was probably the basis for the initiation of Sustainable Development Goals by the United Nations for 2030, but much has not been realised in terms of achievement based on the United Nations Secretary-General, António Gutterres' report on the progress of Sustainable Development Goals for 2018 (United Nations, 2018:3). The report makes it clear that "*Our Common Future*" goals are farfetched and therefore the world will need urgent and collaborative strategies to achieve the Sustainable Development Goals (United Nations, 2018, 3) from a broader perspective.

Among the professions to propagate the agenda and practice it, is graphic design because it has been criticised for promoting rampant consumerism, misconceptions and excesses in our contemporary society for the sake of economic stability (Chmela-Jones, 2014:65). Most researchers have outlined different ways of practising sustainability in helping graphic designers perpetuate sustainability but few graphic design firms are practising the laid down principles, including Africa with its associated problems (Mitchell, 2012). Benson (2007:2) for instance has proposed guidelines for practising sustainability through his *Re-nourish* website but little is being done in the graphic design field indicating the struggle of putting theory into practice. The situation is incomprehensible, either graphic designers do not know that sustainability is an issue or think that their responsibility stops at the recycled paper and soy inks (Mitchell, 2012).

Looking at the issues from a developing nation's context and with Ghana in focus, there are many graphic design and printing firms that have emerged for the past twenty years in the residence-turned industrial community. A typical place is Asafo in Kumasi. These firms form

part of the ecology of professions that are to ensure that their activities are in line with the sustainable development agenda from a sustainability perspective. Currently, there are very many activities that these design firms engage in during their daily operations to produce graphic design products for clients. However, from a practical perspective, no examination has been done on their activities to ascertain whether their activities are in line with sustainability or not. This is required as a matter of urgency since every profession is meant to contribute towards these goals through their activities towards the achievement of the 2030 Sustainable Development Goals (United Nations, 2015:28). Knowing the state of the graphic design practices within the Asafo community from a sustainability perspective will help to advise the graphic design community what should be modified in their practices or advanced by way of their contribution towards sustainability.

On an academic level, there is virtually no information on how graphic design practices are carried out at Asafo, the challenges to sustainability encountered there or even the new design interventions that are being carried out within the community that are in line with sustainability worthy to be captured in sustainability discourse. The possibility that these design interventions may even change the practice of sustainable graphic design is also a matter that ought to be explored in a developing nation. These are the issues that are addressed in this research. The outcome from the exploration and examination regarding graphic design practices will serve as a body of knowledge on the practices of the graphic designers, which is not available in the knowledge bank of sustainable graphic design in a developing nation's context. The findings of the study might even influence the syllabus of graphic design education and sustainability integration in Ghana.

1.8 The structure of the thesis

This thesis consists of eight chapters. Chapter 1 gives an introduction to the concept of sustainability and its relation to graphic design. It establishes that sustainable graphic design has been limited to environmentally conscious design and thus studies on sustainable graphic design lack a holistic sustainability approach. Therefore, there is a need for a holistic approach to sustainability in graphic design but how may it be initiated by researchers and graphic designers, is the research problem captured in this chapter. The aim of the research is to explore and examine graphic design practices to uncover the challenges to sustainability and the emerging solutions to the challenges in graphic design practices as stated in the research questions and objectives, captured in this chapter. Figure 1.0 gives an overview of the chapters and illustrates how the chapters interrelate with one another for achieving the aims of the research.

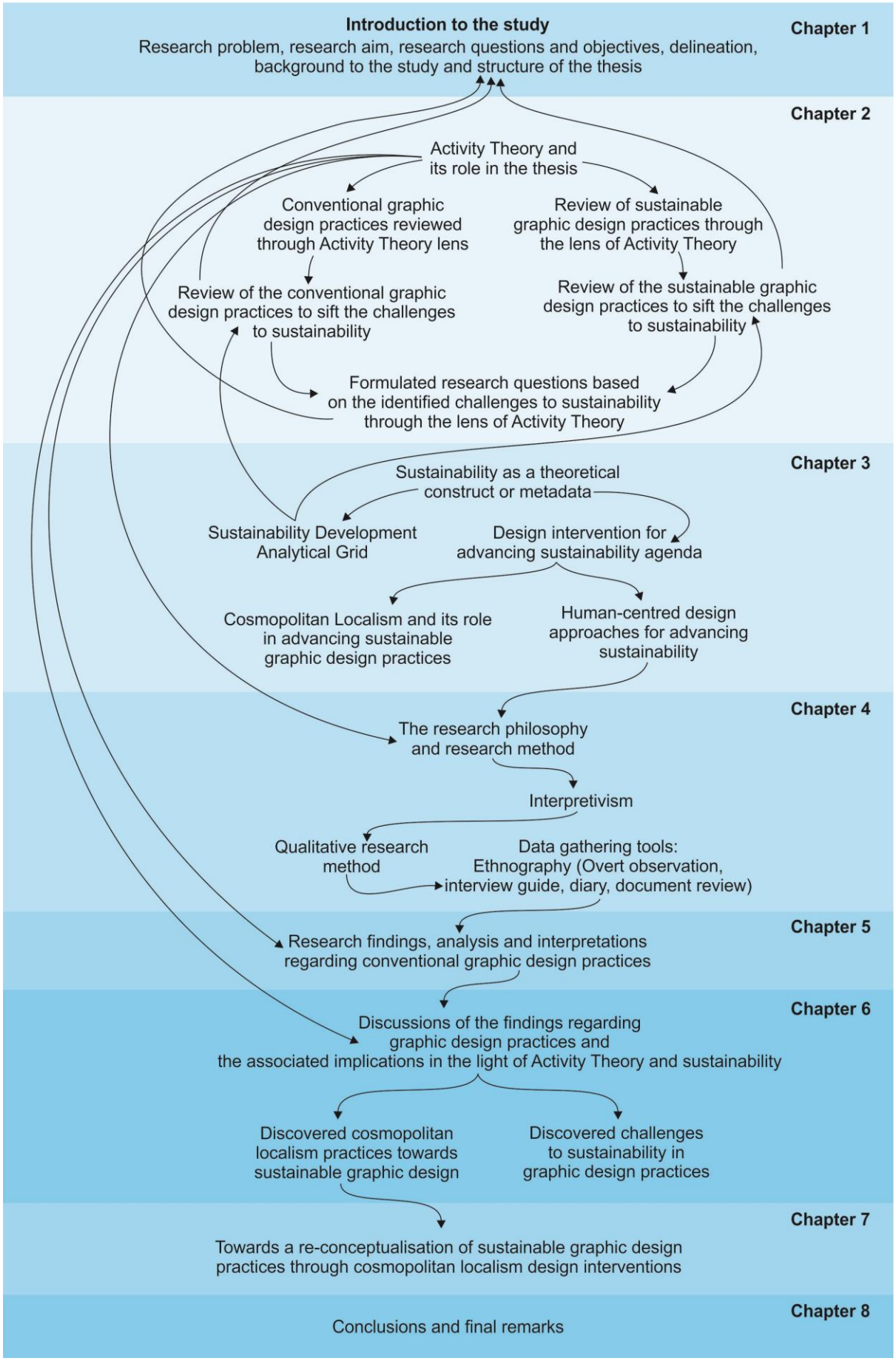

Figure 1.0: Structure of thesis (Author's construct, 2019)

Chapter 2 introduces the concept of Activity Theory and positions it as a presentational tool and an analytical tool for the review of the literature. In Chapter 2, an evolutional review is done from conventional graphic design practices to the current development in sustainable graphic design practices to uncover to what extent graphic designers have embraced the concept of sustainability in their practices. It is discovered that the practice of sustainability is limited to “green approaches”. Moreover, scanty literature is fetched from Africa regarding sustainable graphic design practices. It advances that the solutions developed to counter challenges to sustainability in graphic design might not be appropriate or may even be existing in different forms in Africa.

In Chapter 3, the theoretical and conceptual frameworks underpinning this research are discussed. It also expatiates on sustainability as a theoretical construct and selects the Sustainability Development Analytical Grid as the tool to advance the concept of sustainability for exploring and examining the graphic design practices. Activity Theory is also leveraged as the analytical tool for this research and is combined with the Sustainability Development Analytical Grid and Human-centred approach as part of the conceptual framework for this study. It also covers an exposition on cosmopolitan localism as a design intervention that could be utilised as a transitional bridge to advance the practices of sustainability in graphic design from a contextual perspective. Further, it touches on Human-centred approaches and elaborates on their relevance as a methodological framework for advancing sustainability, which forms part of the research conceptual framework for this study.

Chapter 4 talks about interpretivism as the research philosophy and explains its relevance to the research method. The research design and method are also selected based on the research philosophy. Figure 1.1 shows the research design and the various research tools that are relevant for the data gathering.

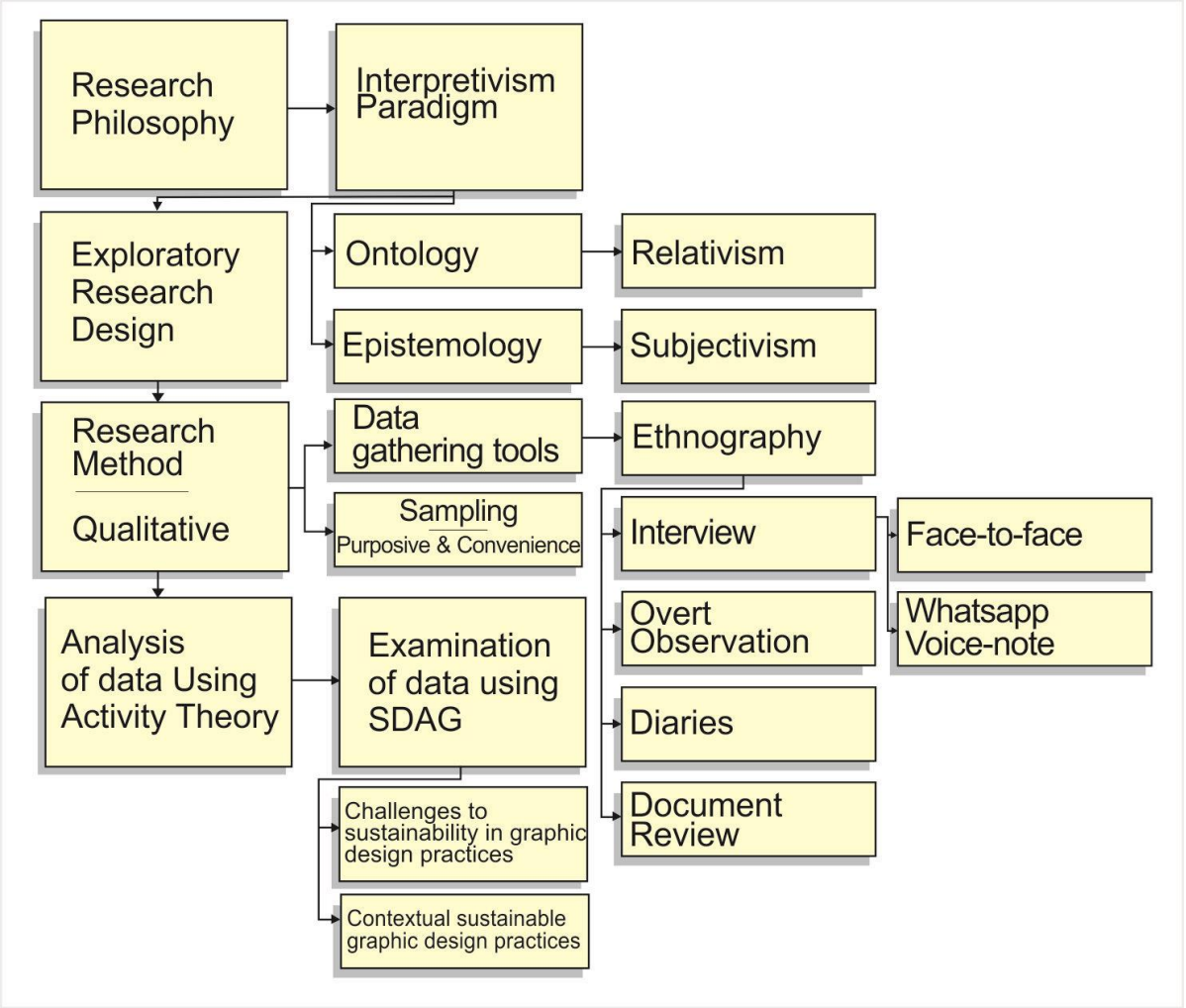

Figure 1.1: Research Design (Author's construct, 2019)

The samples that are used for the study are graphic design firms, graphic designers, clients, creative directors and design documents. They were all selected purposively and a detailed exposition on the usage of an interview guide, observation protocol and document review for the data gathering are supplied. The obtained data is then analysed using a thematic approach and later Activity Theory and the Sustainability Development Analytical Grid. In all the data gathering exercises the required ethics were observed by the researcher for the collection of authentic and valid data.

In Chapter 5, the findings of the research are analysed thematically and presented with the aid of Activity Theory. The findings are categorised based on the research sub-questions derived from the main research questions. Further analysis is also done on the data using Activity Theory on how the respective units interact with each other and bring in focus the associated sustainability dimensions within the units as well as the associated interactions among the units.

In Chapter 6, the analysed data from Chapter 5 is discussed thoroughly and examined from the sustainability perspective to bring out the current state of sustainability in the graphic design practices from a developing nation's context. Series of challenges were identified in the graphic design practices. However, emerging solutions to the challenges were also identified among the community of the graphic design firms and the associated press houses.

Chapter 7 advances that based on the findings on the emerging sustainable localised solutions, which are labelled as design interventions, there is a need to propose a re-conceptualised sustainability framework that embraces cosmopolitan localism to advance the agenda of sustainability in graphic design. The related benefits that the graphic designers and the associated actors within the community derive are all captured in this chapter.

Chapter 8 is the final chapter of the thesis. It gives an overview of the thesis from Chapter 1 to Chapter 7 before expanding on the theoretical contribution of the study. It gives the relevance of the conceptual framework which is a combination of Activity Theory and the Sustainability Development Analytical Grid. It also provides an exposition on the re-conceptualised sustainable graphic design practices. The methodological contribution is offered for other researches to adopt for duplication studies and for further research. It ends with the limitations and recommendations.

CHAPTER TWO

SUPERIMPOSITION OF GRAPHIC DESIGN, ACTIVITY THEORY AND SUSTAINABILITY: AN ANALYTICAL REVIEW APPROACH

2.0 Introduction

This chapter presents a review discussion on sustainability and graphic design from an evolutional perspective through the lens of Activity Theory. Activity Theory as a framework is used to discuss graphic design practices from a conventional perspective to bring out the contradictions inherent in the activity in the light of sustainability. Activity Theory is further used to analyse the literature on the current contradictions in the current sustainable graphic design practices. Thus, two distinct graphic design activities before and after the introduction of sustainability are juxtaposed to fish out the challenges to sustainability, which informs the questions that drive the entire study. The chapter concludes with the implications of the contradictions in the sustainable graphic design practices and the need to explore the contradictions further from an Activity Theory perspective to aid in easing the tensions in sustainable graphic design practices.

2.1 Activity Theory

Graphic design is an activity-driven discipline. For graphic design to be reviewed to unearth the various activities involved in it, it has to be reviewed through employing Activity Theory. Before using the Activity Theory, there is a need to expatiate on Activity Theory's structure and the various units it comprises of. Activity Theory is a theory used for analysing needs, tasks and outcomes of designing or studying multifaceted human praxis or practices related to developmental processes at both individual and social levels (Jonassen & Rohrer-Murphy 1999:62; Kuutti, 1991:13). Activity Theory originated from Soviet psychology but has its roots from classical German philosophy propounded by Kant and Hagel (Kuutti, 1991:13).

Activity theory capitalises on the interaction of human activity and contextual consciousness with the notion of analysing activities people engage in as well as the people engaged in the activity: looking at their goals, the rules, the norms and the object outcome produced from the activity (Jonassen & Rohrer-Murphy, 1999:62). Thus from an Activity Theory perspective, individuals [or a group of people] cannot be understood without their cultural means; the society cannot be understood without the people who create artefacts; the object becomes a cultural entity that embodies humans' thinking pattern (Engeström, 2001:134). Vygotsky (1978 cited in Engeström, 2001:134) argues that unlike animals, human activities are goal-driven and executed by a set of actions through the use of tangible or intangibles tools. Leont'ev (1974 cited in Stetsenko & Arievitch, 2004:486) adds that activity theory is object-

motive driven existing externally in the world rather than in people and that determines how rules, tools, and communities interrelate to produce an outcome

2.1.1 The basic concept of 'activity' in Activity Theory

Kaptelinin (2013) defines activity from a broad perspective as an interaction of an actor with the world which has the potential to transform both subjects and objects. Activity is thus comprehended as a 'unit of life' of a material subject existing in the objective world (Kaptelinin, 2013). In Activity Theory, the unit of analysis is the activity within the activity system which is constituted by the object of the activity, the tools used in the activity and the actions and operations, which affect the outcome [of the activity] (Jonassen & Rohrer-Murphy, 1999:62). Currently, there are three types of activity systems labelled as the first, second and third generation. Each generational type has a focus based on the unit of analysis. The first generation Activity theory was individual-centred resulting in a mediocre outcome based on the distributed cognition perspective (Roger, 2010:28). Engeström (1999:29) argues that the focus of a mediation tool should shift from individuals as social creatures acting within a social context to the relationship among the components of an activity system. Engeström (1999:29) in augmenting his argument of the need to make an activity collective and community-oriented, introduced elements of community, rules, and division of labour to place importance on analysis of the interactions among units. Figure 2.0 gives an overview of the activity system from a second generational activity framework perspective.

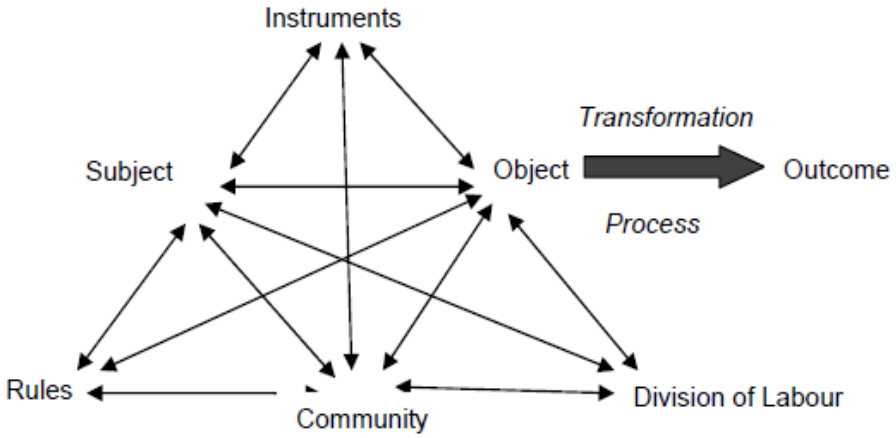

Figure 2.0 Second generation Activity Theory model (Engeström, 1987:78)

The focus of the second generational Activity theory is to represent the social/collective elements in an activity system by adding elements of community, rules, and division of labour with an emphasis on the relevance of analysing their interactions with one another (Engeström, 1999:2). To elaborate further, there is a need to expatiate the meaning of the

various facets of the activity system for clarity. Jonassen and Rohrer-Murphy (1999:63) explain the elements as follows:

1. *The subject of activity: is the individual or group of actors engaged in an activity*
2. *The object of activity: is the physical or the mental product that is sought for*
3. *Tools of an activity: are the [mediating artefacts] used in the transformation process*
4. *Activity/production; is the task, actions, and operations that transform the object*
5. *The community in an activity: comprises of the interdependent aggregate who share a set of social meanings.*
6. *Rules in an activity system: are regulations that guide actions or activities as norms for a community.*
7. *Division of labour: describes the task specialisation of individual members or groups within a community*
8. *Outcome: in the form of instructions developed and implemented.*

In a nutshell Activity theory can be summarised into five principles engineered by Engeström (2001:136):

1. Activity system as a unit of analysis: Goal-oriented actions by an individual(s) and group(s), as well as automatic operations are relatively independent but a subordinate unit of analysis.
2. Multi-voicedness of activity: An activity system consists of a myriad of perspectives, traditions, and interests which surfaced from the division of labour and positions of participants differently based on participants' diverse histories coupled with multiple layers embedded in its objects.
3. The historicity of activity: Transformation of an activity system happens over a space of time forming history and thus understanding an activity system depends on the history of the units of analysis.
4. Contradictions as the driving force of change in an activity: Contradictions are created tensions that are likely to disturb activity systems from achieving a goal but can be dealt with through innovation to improve the activity system as well as the outcome.
5. Expansive cycles as a possible form of transformation in activity: Expansive circles occur when there are contradictions which lead to a deviation on the part of participants in other to avoid the tensions to achieve a set goal.

Langemeyer and Roth (2006:39) argue that Engeström's (1999:2) historicity, contradictions, and expansive cycles contradict themselves. In other words, expansive circles are meant to overcome contradictions which might affect the use of history in understanding especially

units of an activity system, when new tools or instruments are introduced into an activity. Hence from this perspective, Langemeyer and Roth (2006:39) add that it leads to societal relations neglect [as a subordinate component for analysing an activity]. The principles of conflict assessment by Langemeyer and Roth (2006:39) are not weightier when viewed from a broad perspective because an activity can be studied and analysed without the interference of the researcher in the activity. However, the only challenge is that not all five Activity Theory principles might be applied in an analysis of the mentioned context. The only way the five principles might be used is when an activity is being conducted to explore solutions. In this context, the social relations to an artefact or tool might be broken in order to achieve a set goal when there are tensions, especially in an experimentation setup.

Activity Theory is applied to many disciplines. Gedera and Williams's (2015:v-vi) book on education titled *Expansive Learning at Work: toward an activity theoretical reconceptualization* discloses the potency of Activity theory as a framework for analysis for all spheres in education starting from curriculum design through teaching pedagogy to online education. Koszalka (2004:492) and Hardman (2005:378) also analysed technological use with Activity theory exploring the dynamism in computer-human interactions. Hansson (2014:1) studied human behaviour using Activity theory as a framework. Tan and Melles (2010:461) used the Activity Theory to explore mediated tools for conceptualisation in Graphic Design. These are but few of the areas where activity has been used for facilitating activities and as a framework for analysis. This implies that wherever there is an activity, Activity Theory can be used to understand the nature of the activity or analyse the activity.

2.2 Activity Theory: a heuristic tool for reviewing and analysing sustainable graphic design through an evolutional approach

There are two distinct activity systems that are reviewed in this literature using Activity Theory from an evolutional point of view. They are *conventional* and *sustainable graphic design activity systems.* The reason for the evolutional review is to help track where the contradictions or tensions occurred in one system and how it is managed in the other activity system. Central to these two activity systems are the rhetoric (usage of typography and images to communicate or persuade) and pragmatic (selection of materials for printing and selection of print production lines) activities which drive the entire systems.

It starts with an analysis of rhetoric and pragmatic activities from *conventional graphic design* and to *sustainable graphic design perspectives,* followed by the graphic designers as the subjects, then the tools they use as mediating tools, after which the object obtained from the usage of tools will follow, the next is the outcome produced. The rules, community, and division of labour are discussed as well.

2.2.1 Subjects: graphic designers mind-set in conventional and sustainability practice spaces

In Activity Theory, the subject(s) are defined as the individuals or group of actors engaged in an activity (Jonassen & Rohrer-Murphy, 1999:63). Graphic designers are the subjects in this literature analysis from the Activity Theory focus. They are largely responsible for steering the graphic design activities to produce an expected product based on the preference of clients or the audience. The motivations of their practices vary and are individually or group-driven especially from corporate standpoints. An aspect of motivation is passion and therefore, it is a requirement for [graphic designers] because graphic design is rapidly evolving, making it challenging and a competitive space (Santoro, 2013:20). Though passion is a necessity, it is not absolute; there is a need for graphic designers to position themselves well in the arena of creativity blended with the emerging technological skills needed for graphic design in this fast-paced changing world. These skills are affordances of technological strength which have changed what graphic designers make and how they make them (Sandhaus, 2013:405).

Irrespective of the technological affordances, in the sphere of conventional graphic design, graphic designers' work envelopes the creative combination of text and pictures for communication purposes. Aside from the skilful manipulation of text and pictures for design purposes, graphic designers also involve themselves in the planning and production of physical products such as posters, books, magazines, branding, information design, typography and film and television titles (Sandhaus, 2013:405). In a thesis by Scott (2012:1), it was made clear that graphic designers' work is more than just working on aesthetics to appeal to people to sell more products. The main duty is to communicate with or without text to inform and prompt [the audience] to make an informed choice (Scott, 2012:1).

These conventional approaches do not fully consider the need to factor sustainability into the equation because graphic design is a potent platform upon which the capitalist economy stands (Leblanc, 2010:v). Graphic designers' purpose in the conventional space based on their foundation is to relay messages of consumption in other to grow the economy through fuelling the desires for the acquisition of wants rather than needs. Graphic designers are thus "string-puppets" to the current economy to create advertising campaigns that advance gross consumption due to planned obsolescence by companies, manufactured time-bound fashionable products and modification of products (Leblanc, 2010:v). This situation exists to meet customers' demand and satisfaction, which in turn are fuelled by company-driven objectives which are guided by profit margins. The industrial demand thus shapes conventional graphic designers mind-set in the work they do.

According to Rogal (2015:1), for graphic designers to meet global, social and inclusive challenges they have to break away from the usual “norm”. The breaking away is framed as the decolonization of graphic design (Rogal, 2015:1). Rogal (2015:2) adds that the decolonization of graphic design calls for methodological retooling on behalf of graphic designers since they are now transitioning from studio to fieldwork. Among these new areas is the field of sustainability (with all its complex sub-sets) which was born out of the irresponsible effect of graphic design products on the environment and society. Sustainable approaches in graphic design were needed because graphic design is widely perceived as an agent of social change serving as a cultural intermediary but also responsible for over-consumerism and destruction of the environment for personal gains (Soar, 2002:572). Graphic designers are therefore advised to add to their focus new dimensions to make them useful not only to the economy but to the society as well by venturing into new areas that require harnessing their creativity skills (Rogal, 2015:1). These new areas will demand a shift in their mind-set and focus, which will go a long way to affect their motivations and interest.

2.2.1.1 Graphic designers explore new areas: from product to process

Barnum (2006:2) argues that the new areas should not necessarily be making visual products but models that extend their influence to cover collaborative creativity that thrives on strategy and expressiveness for development. Winters (2013:2) adds that graphic designers currently practice not only as designers and do not focus solely on end products; instead, they extend the traditional scope of their practice by utilising graphic design as a platform for critical and reflective inquiry. Graphic design thus has expanded its boundaries beyond just graphics for communication or advertising purposes into research, the design of social systems and design for behavioural change, business development and social collaborations (Winters, 2013:2).

Notwithstanding, the area that is of major concern now is sustainability in graphic design. Though from Activity theory, rules for sustainability have been given, tools have been made available but the mind-set of most graphic designers have not shifted considering the output they produce from their work as pointed out by (Dritz, 2014). Moreover, most proposals and mind-set towards the practice of sustainability are ‘green-focused’, indicating the neglect of the economic and social dimensions of sustainability. From a developing world perspective little is known about the mind-set of graphic designers in the literature thus making it difficult to know how to tackle the need for them to shift their mind-set to a more sustainable one.

2.2.2 Activity: conventional and sustainable graphic design practices

The activity as a unit of Activity Theory though is not captured on the Activity Theory framework; it is located in the centre of the framework as shown in Figure 2.0. Jonassen and Rohrer-Murphy (1999:63) define activity as the task or actions and operations that transform an object into an outcome. There are two distinct activities that are discussed and analysed in this literature review. The review looks at both conventional and sustainability graphic design activities and brings to bear the tensions between the two. Before diving into the two activities, there is a need to bring to clarity the definition of graphic design to serve as the foundation for the review of the two activities from the Activity Theory perspective.

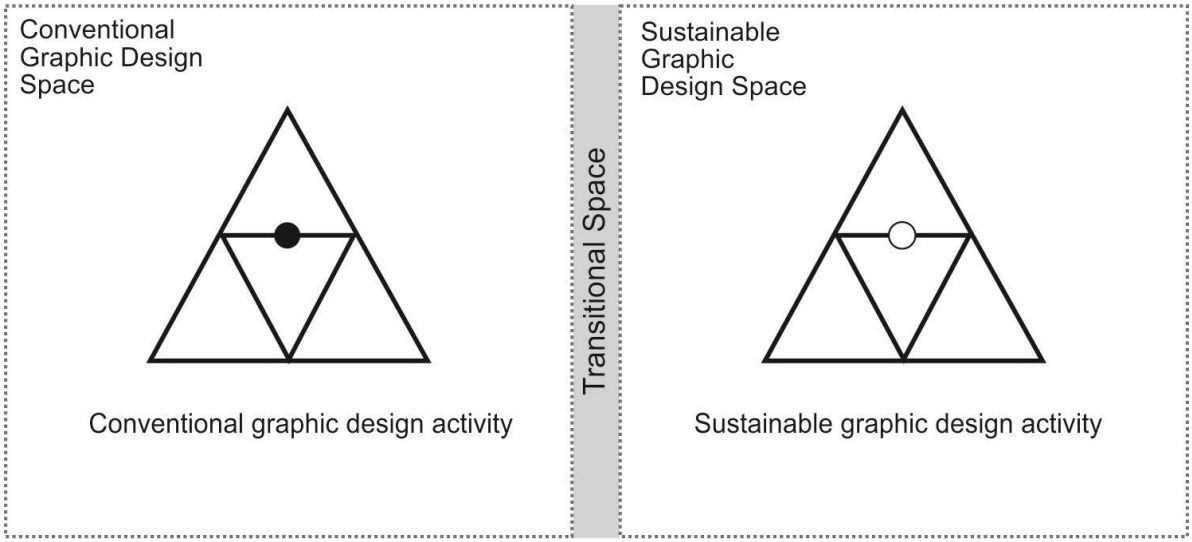

Figure 2.1: Conventional and sustainable graphic design activities (Author's construct, 2019)

2.2.2.1 Graphic design practices in retrospect

Yeoh (2002:7) defines graphic design as the planning and execution of visual communication messages intended for a target audience to achieve a specific purpose. Raff (2012:11) adds that graphic design is an art of conveying visual messages to a reader, interpreter, or observer. The reader makes sense of a visual message through his/her acquired knowledge, skills as well as his or her socio-cultural context (Raff, 2012:11).

Barnum (2015:2) however defines graphic design as a process that creates ideas and innovations to challenge or improve traditional methods of marketing and communication. The definition of Yeoh (2002:7) is more production-oriented putting graphic design into two major spheres: firstly the planning and secondly the execution of visual communication messages - while that of Raff positions graphic design as the mediator of a visual message and its target audience. From all the discussed definitions of graphic design, the key primary responsibility of a graphic designer is to develop visual messages with text and pictures strategically for a target audience to understand and act accordingly for an intended purpose

to be achieved. However, no literature captures the new space within which graphic designers work as part of the definition of the graphic design profession. Graphic design in times past has been limited to the creation of visual messages with text and images. However, due to global challenges in material usage and the creative nature of graphic designers, they have ventured to new design spaces which are not strictly graphics related but design-inclined like service design, systems design and design for sustainability.

2.2.2.2 The major practice areas of graphic design

Graphic design as a professional discipline has graduated from static graphics in the past into new areas which affect the practice definition of the profession in the 21st century and needs recognition. For example, graphic designers now confidently work within the following spaces: website designs, software and game interfaces (Meggs & Purvis, 2012) amongst others in order to meet the demands of the economy and society. All the old and new disciplines related to graphics design utilise three theoretical approaches in their practices: rhetorical, semantic and pragmatic approaches (Barnhurst, Vari & Rodríguez, 2004:629; Hope, 2006:3). The rhetorical approach is centred on how images and texts are encoded to persuade targeted audiences, the semantic approach handles visual images as text, analysing its form, content, and context whiles the pragmatic approach explores the processes of production and reception of visual artefacts (Raff, 2012:11). The focus of this study is mainly on the pragmatic aspect of graphic design which deals with production processes in graphic design and a bit on the rhetorical since it depends on ethics for its regulation.

Frascara (2004:129) further expatiates the purpose of the four theoretical approaches in the practice of graphic design as design for information, design for persuasion, design for education and design for administration. These are traditionally the professional tasks of a graphic designer. Frascara (2004:129) elaborates that design for information covers publishing, administrative instruments (tickets, stock documents, and banknotes), graphs and diagrams, teaching aid, manuals, reports, and catalogues. Design for persuasion has three branches: advertising, propaganda and social agenda, for instance, health, hygiene, and safety issues, which are basically meant to influence societal behaviour (Frascara, 2004:138).

The next is design for education, which is centred on using both persuasion and informational approaches for the development of an individual or a group of people (Frascara, 2004:152). The last is design for administration, which utilises information, persuasion and educational approach for organisational development and societal regulations (Frascara, 2004:160). These four areas utilise rhetoric, semantic and pragmatic

approaches as the engine for execution. Moving deeper into the practice of graphic design, Winters (2013:1) adds that graphic design is a “practitioner-researcher” discipline that utilises research in order to be efficient and effective. Winters (2013:2) further stipulates that graphic designers have long been working within experimental and open-ended spaces illustrating what they do as research and inquiry although academically graphic design is a fairly young discipline, gaining grounds gradually in order to position itself well through research to make it a research-driven discipline (Barnes, 2012:3). Bennett (2006:16) supports Winters’ exposition and elaborates that graphic design as a discipline is at a crossroads currently in its practices because it has moved from intuition-driven processes in visual rhetoric and is heading towards practices that seek to integrate research into the design of objects and experiences for and with the target audience. All these new emerging areas have broadened the scope of the graphic design profession making it difficult to define its practice areas.

2.2.2.3 The graphic design process and its associated activities

The activities of graphic design can well be presented or conceptualised through the use of the design process. The graphic design process is the steps or procedure that a graphic designer goes through when creating a design piece; be it a package, poster, label, brochure, book, company branding, Olympics games branding or a magazine (AIGA, 2015). The process is very relevant especially when assessing how products are created by graphic designers and the ideas driving the creations. The design process can also be used as a means for auditing various activities in the graphic design field.

The process utilised for designing according to the American Institute of Graphic Arts is in five (5) steps: define the problem, research (learn), idea creation, design development and implementation (AIGA, 2015). These steps might not be necessarily followed religiously in sequential order but all are necessary for a successful design output implying that at any point in any of the stages, one can return back to a previous stage when one needs clarification of an idea or a message in the design process. Every step in the process also consists of several activities which are worthwhile in the design process. The first four are driven by the rhetorical and semantic approaches while the latter is pragmatic focused.

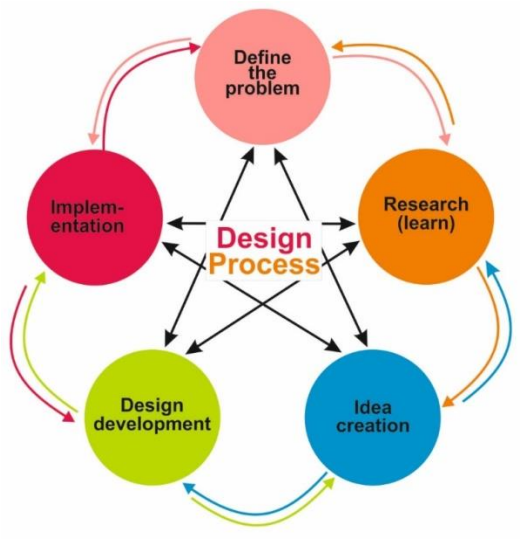

Figure 2.2 Graphic design process (Source: Adapted from AIGA, 2015)

Other researchers like Chmela-Jones (2011:38) proposes seven steps instead of five: identify the problem, independently research possible solutions, conceptualise, develop design solutions, critique, revise if necessary and finally reflect. These seven stages by Chmela-Jones (2011:38) are relevant but do not include implementation which is related to post design activities such as production, transportation, and distribution as captured by AIGA (2015). Van der Waarde (2014) conceptualises the first four stages of the design process by AIGA (2015): define the problem, research, idea creation and design development as the core mandate of the graphic designer which is to create a design that rests comfortably on visual configuration: visual strategies (presentation), visual elements (text, images and schematics) and visual dialogue (commissioner or client and beholder or audience).

Van der Waarde (2014) argues that aside from the visual configuration which is the key mandate of graphic designers the designers also engage in nine reflective activities that support the visual configuration. According to Van der Waarde (2014), these reflective activities might be iterative or non-linear based factors such as experience, personal preference, subject knowledge, and skills. Van der Waarde's (2014) assessment grounds graphic design practices in visual configuration and the nine reflective activities (consider visual configuration, planning and management, consider situation, consider problem, consider perspective, personal development, modification for production, evaluation and testing and presentation and argumentation) making these activities the baseline for the assessment of graphic design practices. However, Van der Waarde (2014) just like Chmela-Jones (2011:38) does not touch on implementation as a core part of the reflective processes.

The implementation of the design is captured by Van der Waarde (2014) under one of his reflective processes; modification for production. Though 'modification for production' (productions facilities, distribution channels, and implementation strategies) is not the core mandate of the graphic designer, it is an important reflective component that needs to be considered in the design process since it has an impact on the output of the designed message or product (Van der Waarde, 2014). Collins et al. (2012:25,37) are not in consensus with the complex proposed design process and thus propose a simple iterative model which comprises of: define research, develop concepts and implement solutions. Though the graphic design process looks simple it embodies all the other reflective processes (Van der Waarde, 2014; Chmela-Jones, 2011:38).

The essence of probing graphic design processes is to firmly ground the activities graphic designers engage in from the conventional approaches. The activities discussed in the context of conventional graphic design are mainly communication problem-driven (as per Figures 2.1 and 2.2) with little expositions on how the production processes influence the design in the design process. In other words, little is known from the design considerations for the pragmatic aspect of graphic design activities. The design considerations from a pragmatic perspective are governed by rules that influence how tools and materials are used within the graphic design activities.

The use of tools and materials are subject to dynamics and may cause challenges based on current development when *subjects* have issues with how to use the tools and materials coupled with the rules and division of labour. From a developmental space, the current challenge with conventional graphic design practices or activities is based on the fact that graphic design was born out of industrialisation thus its life largely depends on it. However, due to environmental decay problems posed by graphic design's quest to move parallel with industrialisation, it has had long and strained challenges trying to decouple itself from industrialization (Leblanc, 2010:1). To help graphic designers to relook at their practices, the *First Things First* manifesto (Soar, 2002:572) was released in 1964 and 2000 with the sole aim to sensitise graphic designers to rethink their practices to ensure a reduction in environmental decay and over-consumption of materials hence the introduction of sustainability to break the conventional approach in graphic design activities. The essence is for graphic designers to transit into a new practice space of activity that is a more responsible one that considers and tries to reduce the negative societal, economic and environmental implications tied to their activities.

2.2.2.4 Sustainable graphic design practices: the situational account

To practice sustainability, the transitional space is so relevant because it serves as an orientation space to enlighten graphic designers on how to approach sustainability. The transitional space will be tackled in Chapter 3 since any challenges associated with the practice of sustainability may occur within the transitional space. Notwithstanding, sustainable [graphic] design is the application of sustainability principles to graphic design practice by considering the full life cycle of products and services and committing to strategies, processes, and materials that value environmental, cultural, social and economic responsibility (GDC, 2018). From a sustainability perspective, graphic designers are supposed to operate in both upstream (promote products and services through concepts to meet marketing plans) and downstream (consider materials, manufacturing, distribution of products) through the lens of sustainability (Dougherty, 2008:46).

Sustainable graphic design practices have advanced in the ecological circle but more has to be done in the spaces of social and economic dimensions. In sustainable graphic design activities, the activities could be directed towards designing and manipulation of stuff [packages/objects], messages and design for activism for corporate social responsibility (Dougherty, 2008:8). In these three spaces, the activities generate much waste that designers can choose any portion to work on towards sustainability (Dougherty, 2008:44). In the designing and manipulation of stuff activity, graphic designers search for alternative materials such as non-toxic inks, recycled papers, tree-free papers and manufacturing [production option] techniques which result in less waste (Dougherty, 2008:10). In designing of a message from a sustainability point of view, the design activity is driven by the need to communicate the essence of sustainability to the corporate world and consumers to inform them of the need to shift towards sustainability, which mostly happens in the space of sustainable non-governmental communication organisations (Dougherty, 2008:12). In the third space, the activity is not design oriented but meant to shift the status quo towards sustainable solutions in designers' practices through advocacy among the designers.

For every sustainable graphic design project, one considers the design brief, uses it to create the concept through the lens of sustainability, which then informs the material and the processes to use, ensuring that messages are truthful; materials are eco-friendly and are able to meet society's needs (UNEP, 2007:10). The approaches to sustainability for graphic design projects (advertising, branding, packaging, publishing and interactive designs) are basically similar. The only difference is that some projects require the use of physical materials, which are prone to generate more waste than graphic design projects on interactive spaces. Thus in the case of packaging more rethinking is required in order to generate sustainable solutions. Aside from these general sustainable solutions or activities,

there are other tools that have emerged along with the concept of sustainability that are ecological focused Dougherty (2008:14) adds that for all sustainable graphic design activities, graphic designers irrespective of their field of interest should engage these questions:

> *Are we having a positive influence or a negative influence? Is our work making life better for people and for future generations? Or are we helping to fray the social fabric that holds us together and the ecological systems upon which we all depend?*

Aside from giving these questions as cues, Dougherty (2008:18) admonishes that graphic designer will have to learn more, struggle against the status quo, and possibly try things that no one in a particular organisation has tried before. Dougherty (2008:18) postulates that a boss or client will not have answers and may not even appreciate sustainability accomplishments. These are assumptions by Dougherty (2008:18) that need to be considered as possibilities to prevent discouragement in the pursuit of sustainable solutions. In reviewing the current sustainable graphic design activities, Dritz (2014:46) identified there are a number of graphic designers who are still not engaged in sustainable graphic design practices and further discovered that the key challenges concerning the setbacks to sustainability practices in graphic design were:

> *Clients found it difficult to understand the concept of sustainability, thus graphic designers had to explain over and over again the practical implications and associated deliverables. Yet most clients could not identify with the concept, which derailed them of their interest. Other graphic designers interviewed did not see the economic value in sustainability and were not sure whether the outcome of sustainability could meet all the criteria of conventional graphic design also the definition of sustainable graphic design is vague to them.*

The challenges in sustainable graphic practices identified by Dritz (2014) justify the assumptions by Dougherty (2008:18). In Dritz' (2014) thesis the challenges were more related to other units like the *tools* and *division of labour* but they impede the sustainability activity of graphic designers. Benson and Napier (2012) also discovered that after teaching sustainability for four years most communication designers were passionate about their own personal social causes with a shallow knowledge of sustainability and did not care as far as they had a good portfolio and stable exciting design jobs. Though challenges have been identified with the current sustainable graphic design practices or activities, they do not give the outcome of their practices in terms of social, economic and environmental dimensions. More so, the sustainability assessment tool used was environmentally focused. Could it be that the graphic designers' conventional activities address the sustainability question in ways that are not accepted, mainstream practices?

The current issue presupposes that there could have been lapses in exploring the conventional graphic design space of the graphic design activities in ascertaining the challenges and emerging solutions to sustainability. To help close up these lapses, there will be a need to relook at or re-explore the practices or the activities of the graphic designers to unearth the challenges and solutions to sustainability in the conventional graphic design space. In exploring further, the two graphic design activities that will be studied are the rhetorical and the pragmatic design activities. The essence on the side of the rhetorical is to understand the motive and the ethos for creating the visual statement and on the side of the pragmatic, to unveil how graphic design production is planned. To aid in the exploration in the activity unit the question is asked*: How do the graphic designers and multiple actors engage in graphic design activities to produce graphic designed products?*

2.2.3 Rules: norms for navigating the design maze from conventional to sustainable graphic design practices

Rules in Activity Theory are the norms or the regulations that guide actions or activities to ensure a standard practice or to avoid chaos towards the achievement of a specific set objective within a community of practice or space (Jonassen & Rohrer-Murphy, 1999:63). From a graphic design space individual and collective graphic design activities are both facilitated and constrained by rules which could be social rules, explicitly stated policies, laws, and regulations as well as the implicit conventions and codes that govern relationships among graphic design professionals and institutional communities (Roger, 2010:28). Though individual graphic designers may vary in their understanding of, and adherence to, these rules, the graphic designers nevertheless constitute cultural boundary markers of a community (Roger, 2010:28).

In a search for rules in the graphic design practices from a review angle, Appiah and Cronjé (2013:20) mentioned three rules in their research: design principles, the pedagogy of design education and studio practice. Pedagogy of design education and studio practice were added because their foci were ideation and design education from the conventional graphic design education angle. However, are these the only rules that design students or graphic design practitioners should adhere to or are there others? Though researchers have not created any trajectory in the rules graphic designers adhere to or should adhere to in their practices, from the review conducted there are three trajectories that drive the rules graphic designers follow or should adhere to in their practices. The three trajectories are design principles, industrial bodies' regulations and graphic designers' morality. These trajectories are for both conventional and sustainable graphic design practices. This thesis does not extend its reach to design principles as rule, though it might refer to it in the tools aspect of Activity Theory.

2.2.3.1 Graphic designers industrial bodies rules or regulations for practices

There are different graphic design industrial bodies which have initiated different regulations for graphic design practices. Among such bodies are the American Institute of Graphic Arts (AIGA), The Graphic Artists Guild, The International Association of Graphic Design Associations (ICOGRADA), Society of Graphic Designers of Canada and Australian Graphic Design Association (AGDA). All these associations have their regulations that the members adhere to. The regulations are also referred to as a code of conduct, which moves beyond mere designing to even the client relationship as well as the community. These codes of conduct or ethics guide the graphic designers in their practice to ensure a fair balance in the needs of the graphic designers, their clients, their profession and the world they live in (GDC, 2019).

The code of ethics is categorised into five responsibility areas; the organisation and profession, other members, clients and employers, society and the environment and competition and fees (GDC, 2019). Not all these five areas of responsibility by the graphic designers are linked directly to the graphic design activities. However, some are linked. For instance, in the code of ethics under the society and the environment, graphic designers are to take a responsible role in the visual portrayal of people, the consumption of natural resources and the protection of the [society] and the environment (GDC, 2019). AIGA (2010) also purports in their regulations that designers are to avoid works that can harm the public or contain false claims or misinform and mislead through deceptive promotions. All these regulations are meant to guide graphic designers in their practices. However, all these guides are from developed nations: Canada and the United States of America. All these practices did not inculcate sustainability deliberately to alter the graphic designers' practices towards sustainability. To counter the omission, AIGA (2010) amended their regulations and added two more to cater for sustainability inclusion their practices. The additions were:

i. *A professional designer is encouraged to contribute five per cent of his or her time to projects in the public good-projects that serve society and improve the human experience.*
ii. *A professional designer shall consider environmental, economic, social and cultural implications of his or her work and minimize the adverse impacts.*

In the case of Society of Graphic Designers of Canada (2018), all graphic design products and services must adhere to strategies, processes, and materials that value environmental, cultural, social and economic responsibility. Table 2.0 gives a detailed guideline for practising sustainable graphic design by graphic designers of Canada.

Table 2.0: Graphic Designers of Canada Sustainable Design Values and Principles

Core Values and Principles	Specific Core Values and Principles
Encourage the evolution of the GDC and the graphic design practice by:	• acknowledging that we are part of an interdependent world; • accepting responsibility for the consequences our actions have on our natural environment; • developing and building sustainable strategies and practices; • participating with the international design community in developing global best practices working to create products and services that are re-usable and/or provide long term value; and by purchasing recycled, local and non-toxic materials wherever possible.
Demonstrate our commitment to improving the natural environment by:	• sharing these principles through our Ico-grada network; • collaborating with other design organizations worldwide to promote and develop best practices for sustainable communications design; • integrating environmental criteria into all design processes and organizational decision making; • employing accountable and transparent processes and procedures; • reviewing our environmental impacts regularly and continually working to reduce them; • adopting practices that use materials in continuous cycles; • seeking suppliers who use sustainable practices; • acting as a community and industry advocates for environmentally responsible design practices; and • developing and providing products and services that improve the quality of life of all beings and support the health and well-being of the planet.
Raise and foster awareness of sustainable communication design practice by:	• promoting the intrinsic and greater value of sustainable communication design; • encouraging clients to integrate sustainable principles into their communication projects; • providing education and information resources to our members and the community at large to inform environmentally responsible design decisions; and • championing sustainable communication solutions for our communities.

(Source: Society of Graphic Designers of Canada, 2018)

The guideline is very comprehensive to guide graphic designers to integrate sustainability in their practices or profession. It gives a fair clue that some graphic designers have far advanced in the practice of sustainability. AIGA also has about 22,000 members who have subscribed to its resources on Living Principles (sustainability principles) and actively interact on the platform on the usage of the framework (Schwarte, 2011:15). However, in the context of Africa few graphic design works have been done in sustainable graphic design practices and are mostly found in South Africa. Moreover, due to the adoption of sustainability in paper manufacturing companies, it is likely that most graphic designers now use these eco-materials for production. However, in the aspect of social and economic sustainability, less is known. Developing countries can also go ahead and adopt these

guidelines but it will be ideal to first explore to find out the current rules they are using and whether they have regulatory bodies that enforce the code of conduct or ethics. The resultant outcomes from the inquiry will serve as a springboard or a platform for the integration of the regulations that should be adopted and how sustainability can also be infused in their practices form individual to the corporate level contextually.

2.2.3.2 Graphic designers' professional morality from a *rule* perspective

There is a group of graphic designers who are freelancers, or even belong to a corporate firm but do not join any design regulatory body. Such designers are likely to operate or design using the rule of morality as their guide for their design operations. Some of these graphic designers are even influenced by their religious beliefs, which regulate how they work affecting their output products and the outcome from the Activity Theory perspective. In such a situation it is rarely difficult to draw the line between wrong and right design decisions (MacAvery, 2010:31). The challenge in this space is that the graphic designers' individual morality is what steers the work. For instance, MacAvery (2010:31) extrapolates that some graphic designers think that ethics in their profession is more related to subservience on the graphic designer's part in relation to their clients. Thus, they always succumb to the instructions of their clients irrespective of the consequences of their design. The other influential factor that comes with this liberal approach to design is that ethics or morality depends on cultural acceptance and societal trends. These two may throw the graphic designers moral judgment overboard because ethics and morality are fluid and dynamic making it difficult to manage. In such a situation the designer may be controlled by the waves of culture and trend.

Graphic designers approach to morality based on cultural acceptance and societal trends will make it difficult to introduce sustainability because of the difference in beliefs and morality comprehension. An attempt to change such a situation will require an ethnographic study of the designers to understand the underlining reasons, which fuel their approach to individual ethics, which in turn will be used to address the challenge from a sustainability perspective.

2.2.4 The community and division of labour in graphic design activity

Every activity happens within a context. Thus, in Activity Theory, the relation between a subject and their environment is considered through the component of a community (Hashim & Jones, 2014). The community serves as a space for the distribution of actions and operations among workers in the community (Hashim & Jones, 2014). The community provides a hub for all actors involved in an activity. The community and object are mediated by the division of labour. Division of labour describes the task specialisation of individual

members or groups within a community (Jonassen & Rohrer-Murphy, 1999:63). The key subject involved in graphic design activities is the graphic designer. Graphic designers' activities are also supported by art-directors and clients. Other actors who assist with the operations in the production of the graphic design products are the plate makers, printing machine minders, paper cutting personnel, and binders. All these people contribute to the execution of the graphical products serving as the object or graphic design product. The actors in the community depend on knowledge and skills derived [from experience, apprenticeship, and formal education] as mediation tools for operations (Hashim & Jones, 2014).

The acquired knowledge and skills applied to these graphic design products are distributed within a specific community of practice (Hashim & Jones, 2014). Thus, a division of labour is community-specific meaning actions and operations within an activity may vary but the outcome object may look physically similar, however, materials and tools may differ. The difference in the graphic design product is as a result of the difference in practices in different communities and may only be noticed upon interaction with graphic design products or the production processes. Therefore graphic design practices cannot be generalised thus requires an inquiry into a specific community of practice to unearth the actions and operations the graphic designers engage in. The next sections of the discussions are focused on the roles the various actors perform within the graphic design community.

2.2.4.1 Division of labour: graphic designers' role

Most of the duties of the graphic designers have been dealt with under *graphic designers as subjects* in section 2.2.1. However, this section gives a summary of their core duties from the conventional graphic design perspective and justifies the relationship among the graphic designers, art-directors and their clients. The other actors in the production chain are all featured in the division of labour. The second aspect leverages the weakness in the conventional approach and shifts the discussion to the sustainable space in graphic design practice. The tensions are discussed based on the mediations from an Activity Theory perspective.

The core mandate of the graphic designer is to solve [visual] communication problems (Collins et al. 2012). Graphic designers mostly work with clients and art-directors to put together and shape ideas to solve the presented visual challenge. In practice, the graphic designer receives a design brief from a client that consists of a visual communication problem to solve. Adhering to the design process, the problem is well defined by the graphic designer alone or with the assistance of the art director or the client by establishing the objective of the visual communication project (Collins et al. 2012:26). The graphic designer

further researches the problem in order to have a better understanding of the problem to develop the required concept to communicate his or her ideas in a bid to reach the audience and influence them to take an intended action (Galkina, 2010:8). Aside from the manipulation of text and images through the use of design principles, other factors are considered such as the medium to carry the message and the knowledge level of the audience. All these influence the design of the visual message.

The last role the graphic designer plays is in the implementation stage, though most designers think their role ends after the design has been done but it goes beyond that. According to Collins et al. (2012:37), the graphic designer is supposed to undertake the following responsibilities in the implementation stage:

> *Copy placement and preparation of layouts from approved text, liaison with suppliers and subcontractors, completion of photography, illustration, charts/graphs, icons/symbols, client liaison for proofreading and corrections, scanning and electronic preparation of images (black and white, duotones / tritones, colour); may include colour correction and/or digital manipulation, preparation of electronic files in line with press/prepress/web requirements, supervision of all prepress materials (final files and proofs), organization, maintenance, and archiving of all digital materials related to the job, production supervision, discuss production options with client, solicit quotes, and select printer/programmer, when contract is awarded, liaise with production services to discuss and refine project details, prepare or review production specifications liaise with client and production to check proofs, oversee production to ensure quality control and follow up after production work is complete.*

The last duty the graphic designer engages in is the evaluation of the finished graphic design product. The evaluation is done using communication, economic and design and materials choice for assessments. The duties stipulated by Collins et al. (2012:37) connote a blend between the art-directors role and that of the graphic designer. This may paint a picture of impossibility for the graphic designer considering the workload of designing but practically most of the graphic designers may double up as art-directors. Moreover, if the graphic design duties stipulated by Collins et al. (2012:37), are practised in the field, the transition into the space of sustainability will not be difficult. This is the case since in the space of sustainable graphic design about 70% of the sustainability work is in the production or implementation space. In the space of sustainability graphic design, the role the graphic designers play is not different from what Collins et al. (2012:37) have purported. In addition, graphic designers have to factor in the selection of mediated tools/materials the negative consequences of the mediated tools/materials on the environment, the society, and the economy. Collins et al. (2012:37) have given their ideal duties of the graphic designer, however, in the context of a developing nation are they put into practice or are there other

ways they carry out such duties? This is one of the areas that will be explored in this research. The next paragraphs contain the awareness of sustainability and the role graphic designers play as well as the associated challenges that need to be addressed.

On the sustainability front, many countries are aware of sustainable consumption and the need to purchase eco-friendly products (OECD, 2008:21). The countries where this awareness had made massive inroads include Mexico, Denmark, Finland, Japan, and Korea (OECD, 2008:21). There is an on-going awareness creation in local communities and cities about the need to involve sustainability in their activities thus many have made progress in moving the sustainability agenda through teaching, research, operations and outreach programs (United Nations, 2015:3). On the business front, many companies have even moved from awareness to practising sustainability in their daily operations using emerging sustainability tools to fight environmental decay, pollution (water and air) and eco-system depletion (Makower, 2015:ii). However, the worrying situation is that despite recent improvements in resource efficiency there is no significant impact ecologically due to their inability to break the link between economic growth and environmental decay resulting from unsustainable natural capital consumption which is increasing globally (Makower, 2015:ii).

Among these companies are graphic designers who, though aware of the sustainability goals, have not been able to embrace it fully. The Society of Graphic Designers of Canada (2009) has instituted the statement of value and principle for the graphic design professionals to guide them in their practice in considering Life Cycle Assessment of products and services by utilising strategies, processes, and materials that value environmental, socio-cultural and economic responsibility. The American Institute of Graphic Arts (2010) has also spearheaded the sustainability awareness campaign, making more graphic designers adopt the concept of 'environmentalism' in their practices. Designers Accord in 2007 promoted sustainability issues in graphic design, however, after all these awareness campaigns many sustainable graphic design educational materials, events, and discourse are still centred on introducing the topic of sustainable design globally (Mitchell, 2012). In the graphic design space in Africa, due to lack of literature, less is known about the awareness of sustainability but it is practised from economic and ethical perspectives rather than from the connection between their practices and environmental degradation.

The awareness of sustainability in Africa by graphic designers has not yet fully matured. Though countries like South Africa, Kenya, Morocco, and Ghana just to mention a few have advanced in the sustainability discourse especially in academia, the practice has been confined to higher education institutions. Most projects have included the sustainability discourse but little impact has been felt in the industry. For instance *Sustainability in Design:*

Now! is a project by Lens which promotes the cross-pollination and dissemination of ideas on sustainability in Africa (Ceschin, Vezzoli & Jun, 2010:iv). They have advanced their projects by creating tool kits for the easy integration of sustainability in different projects by different professions. Some disciplines have adopted the tools for advancement in the practice of sustainability. However, in the space of graphic design, the old approach of "green" has been the practice of most firms. This implies that the awareness of sustainability has been grasped but how it has been grasped by the industry and institutions is the aspect that needs further scrutiny in order to address the challenge because how they understand it steers how they practice it. For instance, Green Edge is a communication firm based in Cape Town, South Africa with the mandate to coach people and businesses to develop "green" strategies for their businesses to become sustainable, but the concept of sustainability is not "green" or environmentally focused only (Green Edge, 2017). Screening various websites on sustainability, it can be concluded that awareness creation should be intensified to deepen the understanding of sustainability in the context of Africa as a whole.

2.2.4.2 Division of labour: art/creative director's role

The art director or the creative director works with clients or in the context of the corporate world, the creative director serves as a mediator between the graphic designers and the client company at the top management level (Galkina, 2010:26). The core duty of a creative director is to ensure effective coordination and integrity between a company's brand strategy and key marketing roles (Galkina, 2010:26). The creative director also develops a strategic response to consumers' needs and expectations in the form of intelligible communication (Galkina, 2010:26). Based on the set duties for the creative director, it is required that the creative director possesses skills in creative planning, development of brand messages, understanding of design significance as a strong communication tool (Galkina, 2010:26). The creative director works with the clients at all levels then relay design information to the graphic designer. In power relations, the graphic designer is to follow the instruction of the creative director who also receives directions from the corporate client or institution. In the sphere of sustainability, little is known about the creative directors' role in graphic design. It will, therefore, be ideal to explore the current creative director's space to ascertain their duties seen from a conventional graphic design space first since there is limited literature on that especially from a developing nation context.

2.2.4.3 Division of labour: the role of the clients

Clients mostly work directly with creative directors who mediate the relationship between the graphic designer and the client. In firms where there is no creative director, the clients work directly with the graphic designer. The client because of his or her aptitude for success influences the implementation process of graphic design production (Galkina, 2010:23).

From the mediation perspective, clients also serve as a liaison between his/her company and the graphic design firm. They at times serve as the liaison between their company and their audience or customers in the provision of communication needs. They provide the creative director or the graphic designer with a design brief, proofread and approve the final design for publishing electronically or in print.

The needs of clients cannot be generalised because every client is unique in terms of needs, attitude and approach to assisting graphic designers in their quest for developing visual communication solutions. Most corporate entities have their colour schemes or codes, personalised typography or even layout format and at times in-house editorial policies. Such companies facilitate the work of the graphic designer when the liaison clients are able to provide all those details (Collins et al. 2012:176). On the other hand, some clients are novices in visual communication leaving everything in the care of the graphic designer. When the designer is a novice designer a lot of challenges may occur. In the space of sustainability, there is no clear role of the client but it is assumed that the client should endorse the sustainability path taken by a graphic designer for the implementation to work. Dritz (2014:35) however discovered in research conducted that some clients found it difficult to understand the concept of sustainability, thus graphic designers had to explain over and over again the practical implications and associated deliverables. Yet most clients could not identify with the concept, which derailed their interest.

2.2.4.4 Division of labour: actors in the production value chain

Other persons involved in the production chain of graphics products from conventional print production method are the:

- plate-makers use light-box machines to transfer images from films onto a lithographic plate using a plate burner
- printing machine minders who operate the presses (printing machines)
- the cutting machine operators
- binding personnel who are responsible for collating, glueing, binding and packaging graphic design products

The printed graphic design product is then trimmed by the cutting machine operators and either bound or made ready for collection. Other tensions also surface but are not captured in literature. The research will bring all such tensions to bear as far as sustainability is concerned. The chain of production uses materials that may have an effect on the health of the working force. The materials also need management and technical skills to avoid waste and environmental pollution. Thus the graphic designer should factor all these in his choice of the production line to ensure adherence to sustainability (Benson, 2007:4).

2.2.4.5 Graphic designers “decolonisation” from industrialisation: the power struggle

Glaser (2015:) argues that designers are always in a weak position since they act as mediators between their clients and the clients’ audience. Glaser (2015) reiterates that designers are not responsible for the marketing objectives, selection of what product to be sold and determining what information to include or reject - in fact, they can barely do the minimum to rescue the situation in terms of sustainability. According to Glaser (2015), graphic designers cannot do much to turn the tables around because they act as “servants” and thus their successes depend on their clients who determine design decisions. Leblanc (2010:ii) adds that graphic design was created for industrialisation and for it to break away from that mandate to adopt sustainability requires a radical stance, which is strongly supported by Manzini (2014:57).

Schwarte (2011:12) on the contrary argues that though designers are not at the centre of marketing or post-production decisions, they can still influence most of the marketing and post-production decisions through their professional advice. Thus, designers cannot use ‘service provision’ as a *carte blanche* to continue their business as usual practices but ought to rather negotiate in a more collaborative way with their clients to reduce the impact of products on the environment (Schwarte, 2011:12). These complex dynamics at play in the role of the graphic designers now need critical examination for the designer to know how to handle sustainability issues at stake. The research, as part of fulfilling its objectives thus seeks to explore the tensions among the various actors within the community of graphic design practitioners that serve as challenges to sustainability in graphic design practices.

2.2.5 Object and outcome: graphic design products and their negative effect on the society, economy and environment

The effects of graphic design are two-fold: the positive and negative. The thesis focuses on the negative effects because the main aim of the research is to initiate interventions collaboratively to minimize the negative effects in all dimensions of sustainability. Graphic designers produce different kinds of graphic design products such as miscellaneous publications, posters, billboards, packages, magazines, labels, books, banners, websites, design and interfaces. The influence of graphic design stretches across social, economic, cultural and environmental landscapes (Benson & Perullo, 2017:3). One of the means to explore the negative effects of graphic design is to examine the life cycle of a graphic design product. According to MacAvery (2010), a product undergoes the following life cycle stages: design, material choice, production, distribution, consumer and end of life then finally disposal onto landfill. The design effects from a communications perspective are linked to

consumption, social and cultural issues while material choice, production and distribution are connected to environmental and economic issues. The negative effects caused by graphic design products are discussed in the next subheadings.

2.2.5.1 The effects of graphic design: the social implications

Graphic design has a far-reaching influence on our society through visual communication materials such as posters, flyers, instructional materials, educational materials and the use of rhetoric in advertising to promote services and products (Haskett, 2005). Design influences consumer culture and lifestyle through promoting consumerism, altering or strengthening of behaviours, controlling of financial expenditure as well influencing how people perceive the world (Reese, 2014:3). Graphic design, thus reinforces the quality of a product by the use of design to shape how people act and think, especially towards a branded product (Reese, 2014:5).

The power of graphic design is also illustrated in the influence it has on society by determining trends or issues; what people buy, what they value and how they live their lives (Reeves, 2015:5). Graphic design influences consumers' lifestyles, consumers' selection of products and usage, making global consumption unsustainable (Reeves, 2015:6). All these indicate that graphic designers potentially have a major role to play in the authoritative nexus of aspiration, desire, product and profit (Reeves, 2015:5).

Historically, graphic design has been a tool for creating, defining and spreading a culture of overconsumption (Leblanc, 2010b:vi). Graphic design as a tool is manipulated by companies for their economic gains irrespective of the negative effects of their actions (Leblanc, 2010b:vi). The aid to companies by graphic design manifest mostly in advertising design and package design. Cormie et al. (2009:3) however argue that graphic design does not stimulate overconsumption because there are certain illegal products which still sell and are over consumed without being advertised. Cormie et al. (2009:4) further argue that the total consumption of "undesirable" goods or products cannot be reduced by limiting or banning advertisements for those products. Cormie et al. (2009:2) counter their own statement by advancing that advertising's sole aim is to provide consumers with information in order for them to make a choice. Cormie et al. (2009:3) do not touch on the rhetoric components of advertisements but sees advertisements as mere information providers without any influence of the power of persuasion.

Looking at the trends of advertising and its influence on goods patronage, it is clear from a broad perspective that graphic design has an influence on consumption. Deloitte (2017:9)

also supports the assertion that advertising has effects on the gross domestic product (GDP). Deloitte (2017:9) perceives advertising as a means of exposing consumers to information to help them make the right decisions when purchasing without touching on hidden persuaders. From the information provision perspective of advertising, the larger the number of people exposed to an advertising message, the greater the patronage results of the product being advertised. For instance, in the arena of packaging design and food consumption, Chandon and Wansink (2007) discovered in their research that packaging is one of the enablers of food consumption. From these assertions, should advertising be abolished or minimised? How will companies survive and continue to serve as a strong tower for employment? In responding to the questions, *The First Things First* manifesto (Barnbrook et al. 1999:2) provides an explicit answer, which is stated in the last paragraph:

> *We do not advocate the abolition of high pressure consumer advertising: this is not feasible. Nor do we want to take any of the fun out of life. But we are proposing a reversal of priorities in favour of the more useful and more lasting forms of communication. We hope that our society will tire of gimmick merchants, status salesmen, and hidden persuaders and that the prior call on our skills will be for worthwhile purposes…*

Though graphic design helps in many aspects of life such as helping to make purchasing decision through design labels and packages, it is currently identified largely with the creation of artificial needs and promoting products that drain society through advertising and consumer marketing communications techniques (Perkins, 2006). These manipulated communication techniques have now transcended into politics for promoting candidates to voters (Perkins, 2006). Perkins (2006) advocates that designers should position themselves as mediators for end-users in order to create *"good designs that do good"*. He adds that to do *"good designs that do good",* designers, especially graphic designers in this context should explore alternatives to resolve the contradictions between business and societal needs (Perkins 2006). He adds that in serving as a mediator these are the questions to ask:

a. Is the message to communicate truthful?
b. Is the service/product to communicate beneficial?
c. Does the product satisfy sustainability requirements?

These questions are worthwhile but the actual issue is should a business not meet the requirements set by the designers what will be the alternative? Sandhaus (2013) argues that the users' cognitive, physical and emotional needs must be protected and cared for. Frascara (2006:33) reiterates that designers' main goal is not to create graphics, services and products but to use their services to create an environment for people to act, realise their wishes and satisfy their needs. To practice these suggestions, it requires an [deeper]

understanding of people, their society as well as their ecosystem (Frascara, 2006:33). In all these, the authors do not engage fully in how to accomplish the said directives using a graphic design or the graphic designers' skills.

2.2.5.2 The effects of graphic design: the environmental implications

The connection between graphic design and environmental decay may seem tenuous, but when one considers the pursuit of profit, one of the powerful enablers of profit-making, namely graphic design, the connection becomes more convincing through investigating the media (materials) used by graphic designers for communication (Leblanc, 2010:3). The traditional media constitute materials that are harvested from the environment and are processed into papers, metals, rubbers and polythene just to mention a few. These materials support the dissemination of graphic design messages however in the processing of these materials, by-products such as waste chemicals and greenhouse gas emissions are discharged into rivers and into the atmosphere respectfully. These by-products have a negative impact on the environment and endanger the lives of living organisms (Benson & Perullo, 2017:5).

The graphic design industry is undergoing transformation with a strong presence in the digital world but at a slower rate than other disciplines (Scan, 2015:2). Online outputs have resulted in less use of materials such as in certain parts of the world in the publishing domain affecting the demand for downstream books and magazines (Scan, 2015:2). Global Web Index (2017) witnessed that digital press patronage is increasing compared to the traditional press. The implication is that in the sphere of publishing, the environmental impact is lessening. Most Western companies are now going paperless, changing the landscape of publishing media for graphic design with the intention to reduce the environmental impact.

Some graphic design firms have adopted new strategies by supplying their clients with PDF files and other portable file formats compatible with tablets and smartphones (Scan, 2015:2). The emerging trend of digital publishing and the adoption of paperless systems for administrative purposes may in the future affect many paper-based publishers and printers economically. The envisaged future of digital publishing based on the current technological trend poses an industrial threat should graphic design not reinvent itself. However, currently, this situation has not fully manifested in Africa. South Africa, though slightly more advanced than most of the countries in Africa, is still at its infancy stage in e-publishing (Gaigher, Lederman & Lederman, 2014). This situation is not different in most African countries, thus, paper as a commodity for graphic designers and other administrative purposes have not declined absolutely.

2.2.5.3 Packaging waste: the environmental invader

Packaging waste generated especially in the Western world constitutes one-third of the non-industrial solid waste and as other countries strive to improve their economy, more packages will be produced and more waste will be generated (Jindal, 2010:108). Some of this waste lands up in water bodies and drainages causing toxicity and flooding (Jindal, 2010:109).

Though packaging is the most potent means of providing containment, transportation and protection (Berk, 2013:625) to end user goods as well as extending the life span of products and food substances, they generate a lot of waste when not managed well after the content of the packages have been consumed. Considering the annual global growth of packaging volumes as seen in Figure 2.3 it is clear that more waste will be generated. Though most of the waste is recycled, especially in Western countries some of them still go waste in the developing nations with little or no technology for recycling. Pongrácz (2007:274) reiterates that though packaging plays an important role in promoting sustained development for the food industry, most important actors who are the end-users or consumers should be well informed about how to manage their post usage to reduce waste irrespective of the government policies and regulations.

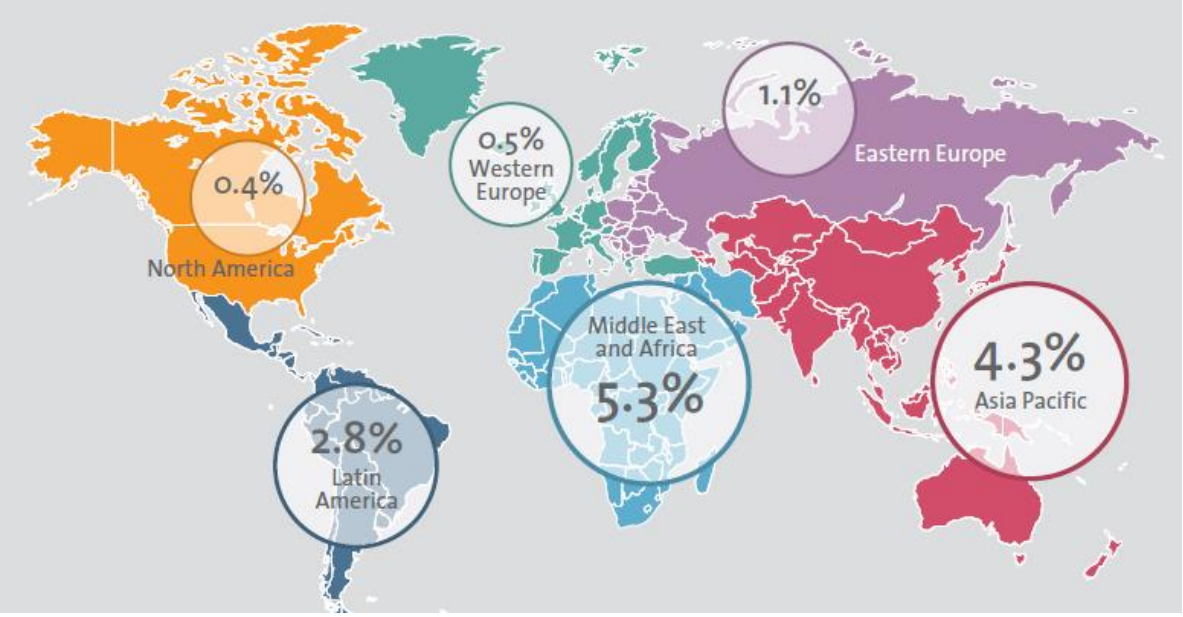

Figure 2.3: Forecast of annual packaging volume growth rates (2014-2019)

(Source: Euromonitor International, 2014)

Considering the projections of annual packaging volume growth rates in the six continents, it is obvious that Africa will be leading with 5.3% increment in their package products in the world by 2019. The envisaged increment in package production will be accompanied by waste generation challenges from the post-life of packages because the majority of the packages will find their way into landfills and water bodies as a result of designers lacking skills and projections to design for recycle or reuse. The Guardian (2017) states that only

14% of plastic package waste is recycled prompting the question, what happens to the remaining 86%? Unfortunately, most of the waste is found in the ocean, threatening the marine eco-system, and poisoning the ocean (The Guardian, 2017).

The challenge now is how can the public maximize the reuse/repurposing of the product packages after consuming the content? This will require innovation and creativity not only on the side of the consumers but also the creative skills of graphic designers to design for waste reduction and management of resources.

2.2.6 Tools: understanding the complexities in the usage of mediating artefacts from conventional to sustainable graphic design practices

Tools of activity are the [mediating artefacts] used in the transformation process (Engeström 1987:78). Tools mediate the object of activity and can be an external material such as a phone or internal material such as symbols and communications (Engeström, 1987:78). Tools play a major role in the transformation of an object into desired or unexpected an outcome (Engeström, 1987:78). They can facilitate or impede an activity-based so many factors such as lack of skills on the part of the subject, wrong application of rules and dysfunctional mediating artefact. In graphic design activities, the mediating tool can be categorised under pre-press, press and post-press. This implies that under the three areas in the value chain of graphic design activities, the tools could be external or internal requiring different skills in their usage to achieve the desired object and the subsequent outcome.

There is limited literature on tools-mediating artefacts for graphic design products in the traditional or conventional space of graphic design practices. The closest to this research reviewed was Tan and Melles (2010:461) research on graphic designers' tool-mediated activities during the conceptual design phase. Tan and Melles' (2010:461) research did not cover the entire prepress stage, neither did they cover the space of press and post-press tools in the value chain of graphic design products production. In the case of Appiah and Cronje (2013:18), they explored the distortions created by the introduction of ICT in the ideation process. Both articles did not touch on symbolic tools even used in the ideation process nor did they consider the implication of the other tools in the press or post-press influence in the conceptualisation. This implies that there are more uncovered areas in literature regarding the mediating tools in graphic design practices or activities. In the pre-press, the tools that are used as mediating artefacts vary based on the experience of the graphic designer. The tool used is categorised into external and internal. The external mediating tools used by graphic designers consist of a computer, internet, design software applications, pens and sketchpad (Tan & Melles, 2010:471).

The tools discovered by Tan and Melles (2010: 471) are a conceptualisation of ideas but in the prepress other tools like mobile phone, image-setter, plate-burners, lithographic plates, films, developing and fixing chemicals are all used by the graphic designer. In the space of the press, the mediating tools used are paper, printing machines, chemicals, inks and colour densitometer. In the post-press, the mediating tools used consist of cutting machines, tape measure, glues, automatic stitching machines, automatic perfect binding machines, UV coating machines and chemicals and lamination machines (Collins et al. 2012:115). The tools mentioned might not be totally exhaustive but the additional tools will only be discovered through the ethnographic study of the entire graphic design practice. The essence of exploring all the prepress, press and post-press is that the nature of the tools and how they are handled affect the waste that will be generated from the graphic design activity. The tools used under the press and post-press may have an effect on the design decisions. However, there is no available literature to justify the assertion. It is based on unavailability of literature on the mediating tools that the research instead of focusing on the sustainable graphic design space want to first explore the tools used to mediate the graphic design product to discover the challenges to sustainability posed by the current tools to inform how the challenges could be managed or minimised in the sustainable graphic design space.

In the space of sustainable graphic design, there are developed tools that are used in addition to the tools in the conventional graphic design space. Some of the tools for the practice of sustainable graphic design are cradle-to-cradle, design for intentional reuse, right-sizing, biomimicry, systems thinking and greener materials (Benson & Napier, 2012:208). These sustainability tools will be discussed in detail in Chapter 3 under sustainability looking at the capabilities and the limitations of these tools from a developing nation's perspective. All these tools are potent as far as sustainability is concerned but the challenge is are they applicable to the developing nation's context or what contextual challenges necessitated their creations? There are limited publications on the challenges that paved the way for the creation of these tools from a graphic design practice perspective. Based on the limited publications, especially in the context of a developing nation, there will be a need to ground this research well by conducting an ethnographic study on the graphic designers' practices in a developing nation.

2.2.7 Challenges to sustainability in conventional graphic design practices

The challenges to sustainability in the conventional graphic design practices in the review conducted have been grouped in accordance with the Activity Theory units. Table 2.1 gives the details and the associated questions arising from the review.

Table 2.1: Challenges to sustainability in conventional graphic design practices discovered from the review (Author's construct, 2019)

Activity Theory Unit	**Challenges**
Subject	Graphic designers mind-set is to please their clients and secure themselves economically
Object and Outcome	1. Advertisements and other forms of designed communications products stimulate overconsumption and promote planned obsolescence. 2. Packaging waste is on the increase with some found in water bodies causing pollution and others littering the environment.
Tools	Waste papers are generated and inks are at times toxic
Rule	Graphic designers adhere to the design principles but ignore any other ethical rules that might conflict with their clients.
Community and the division of labour	Graphic designers succumb to their clients' instructions and that of the creative director limiting their creative skills in solving communication problems in their own way.
Activity	Activities are more focused on defining visual communication problem, research, developing concepts but do not throw more light on the implementation issues that deal with the production of graphic design product.

The challenges identified and summarized in Table 2.1 are scanty and shallow. The lack of literature on conventional graphic design practices and the associated challenges to sustainability do not give us a detailed account of the graphic design practices, especially in an African context. The reason is that there is a need for an in-depth understanding of the graphic design practices in a developing nation's context to help assess the graphic design practices in relation to sustainability. It is therefore relevant that an extensive exploration should be carried out to bring to bear the current graphic design practices of a developing nation using the Activity Theory. This will probably help in discovering the challenges to sustainability and the associated solutions that lead graphic design firms are practising in countering the identified challenges from a local perspective. Based on the argument there is a need to set new questions to facilitate the exploration into the graphic design practices as shown in Table 2.2.

Table 2.2: Questions for exploring conventional graphic design practices (Author's construct, 2019)

Activity Theory Component	**Questions**
Subject	1. Why do graphic designers engage in designing graphic products? (Motivations and interest)
Object	2. What are the natures of the communications content and the graphics designed products produced by graphic designers?
Tools	3. What physical materials, object, knowledge and skills do the graphic designers depend on to achieve the purpose of their activities?
Rule	What norms and conventions do graphic designers adhere to in their graphic design activities?
Activity	How do the graphic designers and multiple actors engage in the activities to produce the graphically designed product?
Community	Who are the multiple actors who share a common graphics designed product?
Division of labour	What are the various tasks executed by the multiple actors in the community and which actor controls the tasks?
Outcome	What are the influence of the graphic design product produced on the environment, society and economy?
Development *(Analysis level in the Activity theory)*	What are the disruptions (tension) and innovations from historical and current graphic design practices in the light of sustainability among the units in the Activity theory?

The last question, which is on the development unit in Table 2.2, will help to unearth the challenges to sustainability in the current conventional graphic design practices. These challenges will then be used to steer the development of sustainable graphic design practices that is for all graphic design products. The next section deliberates on the tensions or contradictions in the sustainable graphic design space.

2.2.8 Contradictions in the sustainable graphic design space

Throwing more light on the summary in Figure 2.4, it is clear in the outcome in the Activity Theory analysis that in spite of the pluralism of strategies for sustainability, only 13% (78,000) of 6 billion pounds of packages are recycled annually (Replenish, 2016). The rest finds its way onto landfills as a result of graphic designers designing and promoting all kinds of packed products for the clients they work for (Replenish, 2016). The challenge for graphic designers just as any other business is the struggle between economic growth and environmental decay, which occurs due to their desire to flourish from an economic perspective. The challenge of promoting all kinds of products and others occur because some graphic designers do not see the economic value in sustainability yet.

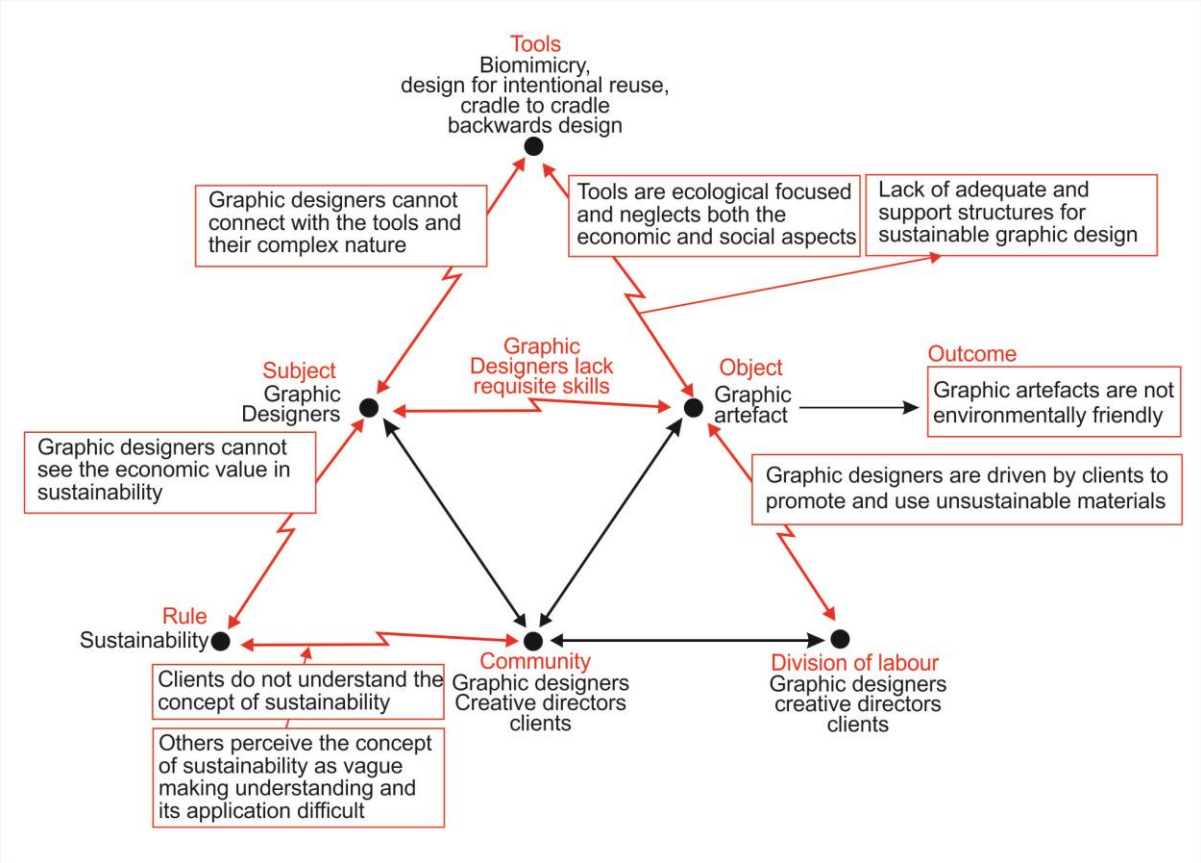

Figure 2.4: Contradictions in sustainable graphic design practices (Author's construct, 2019)

The practice of sustainability in graphic design has been limited to a "green" approach thus sustainable graphic design has been conceptualised and practised as such in many cases (Fry, 2009:82). It is therefore imperative that the "green" concept should be reconsidered and modified to merge social and economic aspects of sustainability. It may lead to enhanced quality of life, economic vitality, social intergenerational equity and environmental quality (Achour et al. 2015:348). To attain this, materials choices and procedures, as well as the messages created, should utilise and contextualise the principles of sustainability to ensure that graphic designers' processes, interactions and needs do not counter the purpose of sustainability. The graphic design community is a fluid entity and will adapt to new ways of doing things when designers facilitate the change (Dragustinovic, 2016).

Though tools are available graphic designers lack the methodologies for integrating sustainability principles in their practice (Tischner, 2006:23). Tischner (2006:23) adds that these tools and methodologies will help position designers, clients and consumers on the same scale to drastically leapfrog sustainability beyond incremental improvement. It is clear that it is not about the tools or materials because projects like LeNS have developed many tools for integrating sustainability. However, in the research conducted by Dritz (2014:46), she posits that the challenge to slow or incremental approach to the adoption of

sustainability is based on lack of industrial definition for sustainability for graphic design practices. Dritz (2014:46) further argues that even those who are practising sustainable methods feel unsupported in their efforts because there are rarely established methods and practices for them to adopt.

The question is; is it difficult to adopt sustainability or is it as a result of lack of knowledge and the know-how to apply sustainability? Murray (2013:22) responds that how the awareness of sustainability has been framed is wrong because it is not about saving the earth, it is rather about saving the people on earth. This has made it difficult for people to connect to the concept of sustainability and how to practice it. Murray (2013:23) further proposes six attributes or qualities that could assist individuals to consciously transit towards sustainable behaviour. They are awareness, knowledge, skills, empowerment, motivation, and practice. Murray's (2013:23) suggestion is open-ended making it difficult to implement the proposal. For instance, let us consider "skills". Murray (2013:23) does not give specifics of the components of the skills and how to acquire them. These challenges mentioned are surface issues and do not unveil the causations; cultural factors, style of practices or the trend of practices; methods of designing, types of material usages, the factors for the choice of materials and tools especially in a developing nation's context.

2.3 Summary: implications of the review and the way forward

The review covered an evolutional approach from conventional graphic design practices to current development in sustainable graphic design practices with a focus on how graphic designers have been able to adopt sustainability in their practices. The review disclosed the current trends in the practice of sustainable graphic design with an emphasis on the design process, materials choice and factors considered showing the role of the graphic designer as mediators for sustainability. It also explored into the challenges graphic designers have in the practice of sustainability. It was discovered that the practice of sustainable graphic design has become stagnant due to factors such as lack of understanding of the concept of sustainability, lack of tools and the right methodological approaches. However, scanty literature was fetched from Africa as a continent. All the sustainability studies in the context of Africa were mainly centred on institutions, exploring how it could be integrated into communication design courses or programmes. Besides Africa, the review showed that countries like USA and Canada are far advanced in the practice of sustainable graphic design but literature still advances that considering the volume of environmental and social challenges, much can be done by the graphic designers through using their creative skills to remedy the situations advancing eco-design and human-centred design. Another deficiency relating to the practice of sustainability in graphic design is a lack of literature on socially intrinsic factors underpinning sustainability challenges in graphic design practices. Available

literature focuses on technical challenges relating to eco-material usage with no focus on the social and economic dimensions.

The review in the conventional graphic design space unveiled that there is scant literature on the challenges to sustainability in graphic design which necessitated the development of sustainability tools. The scanty literature, therefore, justifies that the sustainable solutions developed may not be appropriate for graphic designers to adopt. It may be difficult for graphic designers especially from a developing nation to connect with the sustainability tools since they were not designed as a result of using the challenges to sustainability in the graphic designer's practices from a developing nation’s context. It is, therefore, a necessity to explore the practices of the graphic designers to understand how they carry out their activities to uncover challenges to sustainability in their graphic design practices and also to search for emerging solutions within the same context and locality of practice to help offset the challenges in the light of cosmopolitan localism. In other to unveil the challenges and solutions relating to sustainability the entire graphic design practices will be studied after which sustainability lens will be used to sift the challenges and the solutions. Table 2.2 shows the questions for exploration. Thus the focus of this research is two-fold, first to explore the graphic design practices and second to sift the challenges and the solutions to sustainability in the graphic practices within the same context using the approach of cosmopolitan localism.

CHAPTER THREE

THEORETICAL AND CONCEPTUAL FRAMEWORK

3.1 Introduction

This chapter discusses the theoretical and conceptual framework underpinning this research. It covers sustainability as a theoretical construct and expands on the Sustainability Development Analytical Grid as the chosen tool for exploring and examining the graphic design practices. Activity Theory was also adopted as the analytical tool for this research and was combined with the Sustainability Development Analytical Grid and Human-centred approach as part of the conceptual framework for this study. It also covers cosmopolitan localism as a design intervention that may be used as a transitional bridge to advance the practices of sustainability in graphic design. It also touches on Human-centred approaches and elaborates on their relevance in the conceptual framework in the space of the methodological framework.

3.2 Sustainability as a theoretical construct

With an ever-increasing world population, the adoption of planned gross consumption as the engine that would steer the world economy and yield wealth and happiness to our people, our countries and our planet have failed. This situation has led to income inequality and the rapid destruction of resources, planet and humanity (Dragustinovic, 2016). Dougherty (2008:24) has long campaigned that there is the overconsumption of the earth's resources annually, which incapacitates its production systems. Figure 3.0 shows that increased consumption leads to decreased resources, which causes calamities endangering human life on earth. Companies and individuals have been advised to adopt radical but practical approaches that will help reduce the world's pressing problems created as a result of different eras and phases of materialism globally. At the heart of these approaches is sustainability which was coined by Brundtland as "development which meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations, 2010:2). Sustainability is not a new concept; ancient Buddhist culture capitalised on less material usage, recycling, reusing and repurposing (Dragustinovic, 2016). Sustainable living, a revisiting and adoption of the ancients' way of living have become a matter of necessity to break the current trend of over-consumption.

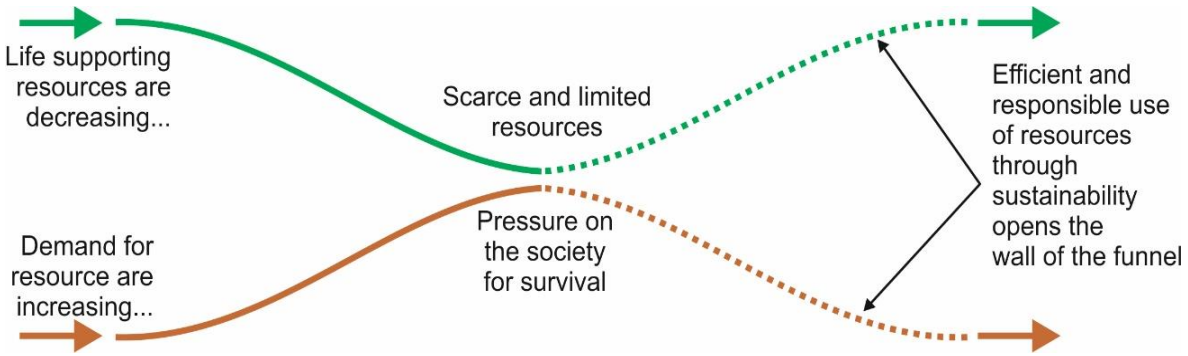

Figure 3.0: The natural capital funnel loosely based on "The natural step funnel" (Source: Srinivas 2015)

3.2.1 The concept of sustainability

Sustainability consists of three pillars. They are environment (planet), society (people) and economy (profit), and are mostly presented in a visual form as an interlocking system for equity or concentric circles to illustrate interdependence among one another (Barron & Gauntlett, 2002 as cited in Mak and Peacock, 2011:3). Thus if the environment is destroyed, society and economy will cease to exist. It is, therefore, necessary as far as sustainability is concerned to ensure that humans utilise sustainable principles in their day-to-day activities to propel a responsible use of resources for production and consumption of materials. Sustainability as a concept embraces not only economic development but socio-cultural equity and ecology as well (Khalili, 2011:7). The indication is that total sustainability is never achieved until all the three pillars are factored in production, a process, a product or a social environment (Lee, 2014:160).

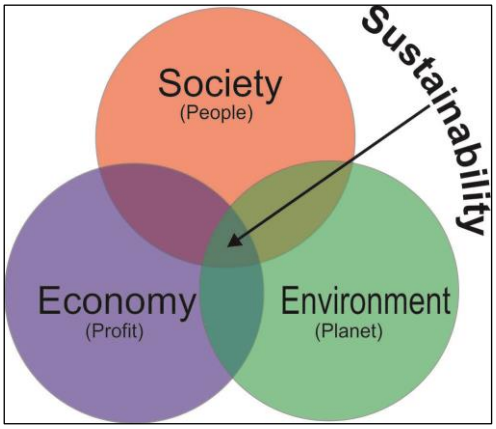

Figure 3.1: Interlocking circles model of sustainability (Source: Lee, 2014:160)

Sustainability as a concept is an ethically rooted discipline when viewed through a bio-centric lens. However, it moves beyond biocentrism to intergenerational equity to ensure that future generations are also able to meet their needs (Horn, 2013). Thus ethics for the future,

as well as the reflection upon our interaction with nature and nature's effect on future generations ought to be fore-fronted. From this perspective, connecting people to the concept of ethics is part and parcel of sustainability. York and Becker (2012:3) advance that sustainability stands for the relationship between humans and nature. York and Becker (2012:3) posit that the ethical dimension of sustainability is related to promoting harmony among human beings and between humanity and nature. York and Becker (2012:4) further elaborate that sustainability is responsibility oriented and it is meant to help recognise the synergy among current contemporaries, nature, and future generations in terms of relations. Ethics and sustainability are thus inseparable. All these dimensions require equal attention but some researchers think certain aspects need urgent attention in the current state of the world, which might skew the balance and make holistic sustainability difficult to achieve (Bossel, 1999:2).

3.2.1.1 Sustainability Analytical Grid as a lens for assessment of graphic design practices

In using sustainability as the lens for assessment of the graphic design practices, the Sustainable Development Analytical Grid was adopted. "The Sustainable Development Analytical Grid (SDAG) was developed by the Eco-Advising Chair of the University of Quebec in Chicoutimi (UQAC) stemming from the initial work of Villeneuve, which provides stakeholders with a tool that allows them to fully play their roles in assessing sustainability" (Villeneuve et al. 2017:4). It has been refined over the past 25 years because the traditional Tipple Bottom Line (economic, social and environmental) used by sustainable development early practitioners lacked complete and thorough assessment framework and methodology (Villeneuve et al. 2017:3). The selection of Sustainable Development Analytical Grid is based on the fact that the United Nations has recognised it and uses it as part of its Sustainable Development Goals toolkit. It was also chosen because it has been tested and used in developed and developing nations and can be applied to policies, strategies, programmes and projects of different kinds (Villeneuve et al. 2017:3). Aside from the reasons stated for the selection of the Sustainable Development Analytical Grid, it is flexible in its usage allowing for re-configuration or questioning of themes based on the phenomena it is applied to (Villeneuve et al. 2017:3).

The Sustainable Development Analytical Grid 2011 edition consisted of five dimensions (ethical, social, ecological, economic, and governance). In 2016, culture, which was under the social dimension, was developed into a dimension. Thus, the Sustainable Development Analytical Grid consists of six dimensions (ecological, social, economic, ethical, cultural and governance), which are used for assessment of different projects, programmes and policies relating to sustainability (Villeneuve et al. 2017:4). For the purpose of this study, the 2016

Sustainable Development Analytical Grid was chosen because it has been refined and it is robust guaranteeing the reliability of using the dimensions and the appropriately selected themes. In using the Sustainable Development Analytical Grid for assessment for the mentioned areas, five steps procedure (preparing for the assessment, weighting, evaluation, current and future actions and improvements, results interpretations and sustainability assessment) are to be followed (Villeneuve et al. 2017:4). These five procedural steps indicate that the Sustainable Development Analytical Grid has a quantitative aspect, which is not the focus of the research method to be used in this study. Aside from this, it is also a community-based tool thus using it in the context of a graphic design discipline calls for a reconfiguration of the tool. Therefore, the five procedural steps were not be adhered to. Instead, the six dimensions and the associated themes were used in this study. Even with the six dimensions some of the themes were selected based on their connectedness to sustainability in graphic design practices. Although the usage of all the dimensions of the Sustainable Development Analytical Grid is an obligation as advanced by Villeneuve and Riffon (2012:9), not all the themes might be used for every assessment based on the phenomena or the speciality area being assessed.

Moreover, in the case of Villeneuve and Riffon (2012:9), their stipulation on the obligatory use of all the dimensions and possibly the associated themes were based on the use of the Sustainable Development Analytical Grid for community-based policies, projects, strategies or programmes with no academic bearing. Thus, in their circumstance re-configuration of the Sustainable Development Analytical Grid might not be ideal since a holistic sustainability report is required. However, in the domain of academics, a researcher might decide to cover some selected dimensions and the associated themes of the Sustainable Development Analytical Grid, which are within one's speciality, leaving the others as the research's limitation and provide a recommendation for other researchers to tackle it. This implies that in the usage of the Sustainable Development Analytical Grid in the academic domain, some dimensions can be selected based on the focus of the study without necessarily using all the dimensions and the associated themes paving way for re-configuration of the Grid. The next subsection discusses and justifies the selected dimensions and themes used in this study.

Table 3.0 shows all the 2016 Sustainable Development Analytical Grid dimensions and the associated themes. The underlined themes were the ones selected and used for the assessment of the graphic design practices. The selection of the themes was based on the relevance of the theme to sustainable graphic design practices, any other theme, which is not directly linked was not selected. The non-selected themes are also discussed to elucidate why they were not selected for this study. All discussions are done in the context of graphic design practices.

Table 3.0: 2016 Sustainable Development Analytical Grid Dimensions and Themes of SDAG (adopted from Villeneuve et al. 2017:5; Villeneuve & Riffon 2012:9)

Environment	**Social**	**Economic**
Renewable resources *Non-renewable resources* Energy *The output from human activities* Biodiversity Land use *Pollutants*	*Health* *Safety/Security* *Education* *Individual integration* *Freedoms* Recognition	Ownership/Goods/Capital *Quality Goods/Services* *Responsible consumption & Production* *Financial viability* Wealth creation Wealth sharing Work conditions
Governance	**Ethics**	**Culture**
Decision-Making Participatory/Democracy *Monitoring and Evaluation* PSPP Integration Subsidiarity Risk Management	*Responsibility* *Peace* *Benevolence* *Sharing* *Ethical Process*	*Transmission and cultural heritage* *Cultural and artistic practices* *Cultural diversity* Contribution of culture to the development

Before discussing the selected dimensions and themes, I will like to establish that though the 2016 SDAG has six dimensions, they can still be collapsed into the three sustainability components (Social, economic and environmental) for easy assessment and presentation. Governance and ethics are basically meant to regulate the society for compliance with environmental consciousness, social responsibility and economic viability, thus they can be put under the social dimension. In the case of culture, it was converted from a theme under the social dimension into a dimension, therefore I will still categorise it under the social dimension for presentation sake. This implies that governance, ethics and culture are considered as sub-dimensions under the social dimension in this study.

In the environmental dimension, the themes selected were renewable resources, non-renewable resources, the output from human activities and pollutants. These were selected because they are directly linked to sustainable graphic design practices in terms of the materials used, the production process and the by-products from the value chain of graphic design production. The themes; energy, biodiversity and land use under the environmental dimension were not used because graphic design practices have less to do with land usage and biodiversity. In the case of energy, laptops and machine used utilise electricity from hydro-power but that is not part of the core indicators for sustainable graphic design practices.

The social dimension in this study covers the sub-dimensions; governance, ethics and culture. Under the main social dimension, the themes selected were health, safety/security, education, freedom and individual integration. Health was selected because of the graphic designers, printing machine minders and creative directors' interaction with printing inks,

lithographic plate's developers that can affect their health during the production processes. All the health issues are also linked with safety as well. The education has got to do with graphic designers and creative directors' forms of education they receive and the related content of their education and how it impacts on sustainability. The individual integration too has got to do with how the graphic designers work together towards achieving their design objectives either with their clients or creative directors as well as the printing machine minders and the other binding officers. In the aspect of freedom, it relates to graphic designers' liberty towards creativity in the design process involving the creative directors and the clients. Recognition was the only theme left out due to no direct bearing on graphic design practices. In the sub-dimension of governance, decision-making and monitoring and evaluation were selected because of the role of Ghana Foods and Drugs Authority as well as the Environmental Protection Agency in creating social and environmental set standards for the graphic designers to promote sustainability. In the case of ethics, all the themes were selected. Responsibility connects with graphic designers' environmental and social consciousness in their practices while peace, benevolence, sharing and the ethical process has got to do with how the graphic designers work amicably together to achieve the best designs while following the set ethical standards. In the domain of the culture, all the themes were selected. All the themes connect to how artistic practices reflect the culture of the people.

In the domain of economic, Quality goods/services, responsible consumption and production and financial viability were selected. Quality goods/services were selected because of the quality of the printed works, while responsible consumption and production are linked to the usage of materials and production strategies These were not selected because they do not have a direct bearing on the graphic design practices; wealth creation, ownership, wealth sharing and work conditions.

In using the Sustainability Development Analytical Grid, it comes with a set procedural guideline which is quantitative oriented, thus based on the research method of this study, which is qualitatively focused; the set procedural guideline which is stated earlier was not followed strictly. Instead, the assessment was done by using the selected themes as guidelines to evaluate graphic design practices.

3.2.2 Common sustainability design interventions

There is a number of sustainability strategies labelled as design for sustainability approaches meant for spearheading the practice of sustainability in different fields. Ceschin and Gaziulusoy (2016:139-141) disclosed in their "Evolution of design for sustainability"

paper, a myriad of approaches starting from green design to design for system innovations and transitions. In discussing the various approaches for the practice of sustainability, Ceschin and Gaziulusoy (2016:139-141) simplified the discussions on each approach by looking at the focus of the approach, its strengths, the limitations and the areas for further research.

The first to be discussed was the Green Design approach, which capitalises on minimising environmental impact through redesigning products but lacks depth, promotes green consumerism and focuses majorly on a single environmental issue (Ceschin & Gaziulusoy, 2016:139). The next approach was Eco-design with a focus on using a life-cycle approach to minimise environmental decay caused by-products but this approach also fuels overconsumption as advanced by Ceschin and Gaziulusoy (2016:139). The others that were also discussed were: Cradle-to-Cradle with its focus on a regenerative approach by the industry to close-loop waste, which is also termed as “waste is equal to food”. Though Cradle-to-Cradle is accepted, it is not technically justified because of the different ways users experience products. Another approach discussed by Ceschin and Gaziulusoy (2016:139) is biomimicry, which is built on copying nature’s design of form, products and systems by appreciating nature as a model, measure and a mentor (Ceschin & Gaziulusoy, 2016:139). Biomimicry is environmentally centred and does not address the social and economic aspects of sustainability.

All the sustainability approaches discussed require a certain level of technological advancement to implement as well as in-depth knowledge on the processes for their implementation. The approaches may not be applicable in all situations based on the nature of the challenge to sustainability encountered contextually. Based on the shortcomings of these approaches as identified by Ceschin and Gaziulusoy (2016:139-141) it will be appropriate for the concept of “cosmopolitan localism” to be adopted since the types of challenges to sustainability encountered by graphic designers in a nation or a locality differs and will make general application of sustainable solutions difficult. However, if graphic designers are allowed to approach or connect to sustainability in their innovative ways it might help to unleash solutions off-the-grid but applicable locally to produce the expected sustainability outcome. In such a situation, the graphic designers will welcome global ideas and localise the ideas to suit their context. Thus, this research will advance the concept of cosmopolitan localism as a means of approaching and connecting to sustainability by graphic designers in a developing nation. The next sub-topic explains the concept of cosmopolitan localism and positions it well in this research as a design intervention that gives room to open-ended innovations.

3.3 "Cosmopolitan localism": an approach for design intervention that supports open-ended innovations

The adoption of sustainability can be done through technological, social, socio-technical or even resilient means to counter a risk society filled with uncertainties now and in the future. In the current risk society, in a bid to defray these risks and uncertainties, different global models have been developed but there are a number of challenges associated with just mirroring a global solution based on constraints of a locality or a nation (Manzini & M'Rithaa, 2016:276). Thus, most global solutions might not work outright when applied without contextualising them. It is based on this that Manzini and M'Rithaa (2016:276) advance that to make our societies more resilient to these social and economic uncertainties, we must move away from dominant ways of thinking and doing or away from mainstreaming fragile models. In place of these fragile models, cosmopolitan localism can be adopted because it is perceived as a creative balance between being rooted in a locality and being open to global flows of ideas, people and things (Manzini & M'Rithaa, 2016:279). In a nutshell cosmopolitan localism simply refers to a means of joining the global train through a local means. The inability to manage the balance can skew the generated ideas towards either the local or the cosmopolitan space and render the solution ineffective. Thus, going the cosmopolitan localism way might be difficult but we do not have to start from the beginning because there are already emerging "concrete experiences that could consolidate and spread to become the most convincing answers to the dramatic challenges that we must now begin to face" (Manzini, 2010:8).

Cosmopolitan localism is driven by these qualities: small, local, openness and connectedness. Small in this context is not small because of the interconnected series of the local systems that make it easy to manage and control, which are also connected to global hubs allowing utilising of global ideas in local ways creatively, and from an openness perspective. Manzini (2010:10) advances that these four qualities are very relevant because they are as a result of synthesising the results of 20 years of discussions and concrete experiences, which clearly indicate that there is no hope for designing sustainable solutions without starting from the notions of *local* and of the community to which this local mainly refers. Manzini (2010:10) concludes adding that there is no hope of implementing sustainable solutions without considering these localities in the framework of contemporary transformations. The concept of starting sustainable solutions from the local serves as the *spinal cord* for this thesis and what the whole study is advancing. In advancing the concept of small, local, open and connected qualities for cosmopolitan localism in the domain of graphic design practices towards a sustainable one, graphic designers cannot just wear the jacket of global solutions but need to re-tailor them to suit their context. Based on this assertion, it is clear that solutions to challenges to sustainability will differ from locality to

locality and therefore there is a need to explore the solutions to challenges to sustainability within the local context to reveal the viability, potency and applicability of solutions that can be disseminated to benefit the entire community of graphic designers locally. The next sub-topic elaborates on the methodological framework that was employed for data gathering.

3.4 The transitional space towards the practice of sustainability

Manzini (2010:8) advances that many innovations are happening within the transitional space towards sustainability and labels these innovations happening as emerging scenarios in the socio-technical space. Manzini (2010:8) articulates that the only way to move out of unsustainable ways of living is to promote new ways of doing things in all spheres of life. Among these new ways are green evolution, diffusion of creativity and spread of networks which are all forms of design interventions (Manzini 2010:8). Among the disciplines harnessing the power of 'green' evolution is graphic design. The "green" evolution came with design interventions such as *Cradle to Cradle, Design for Disassembly* and *Eco-product*. However, from a sustainability point of view, Manzini (2007:17) declares that much has not been done due to overconsumption of eco-products resulting in a 'boomerang' effect. Thus, Manzini (2007:17) advocates that the amplification of ecological evolution with its attendant design interventions will still head us for real crisis when sustainability is viewed holistically. Manzini (2008:15), therefore, proposes that another alternative to achieve holistic sustainability in general terms is to shift the focus from eco-design to human-centred design.

From this pedestal, the entrenched sustainable graphic design position always described as eco-sustainability needs redirection through a human-centred approach to explore how far it can drive the sustainability agenda practically in the graphic design discipline. The quest for redirection from eco-design to human-centred to practice sustainability by graphic designers, therefore, comes with the need to first be acquainted with the current graphic design practices contextually. The contextual examination of the current graphic design practices in the light of sustainability will aid in knowing and understanding the missing blocks. The examinations of the current practices require approach(s). The approaches consist of information gathering tools and design creation tools. The commonly utilised approaches are ethnography, contextual design, empathic design, co-design, lead-user design and participatory design in the design disciplines (Steen, 2011:48). All these approaches come under one umbrella called Human-centred design (Steen, 2011:48). Human-centred design can, therefore, be labelled as a research methodological framework that holds approaches and tools that aid in a design transition. The next paragraphs explore human-centred design in detail as a research methodological framework for this study.

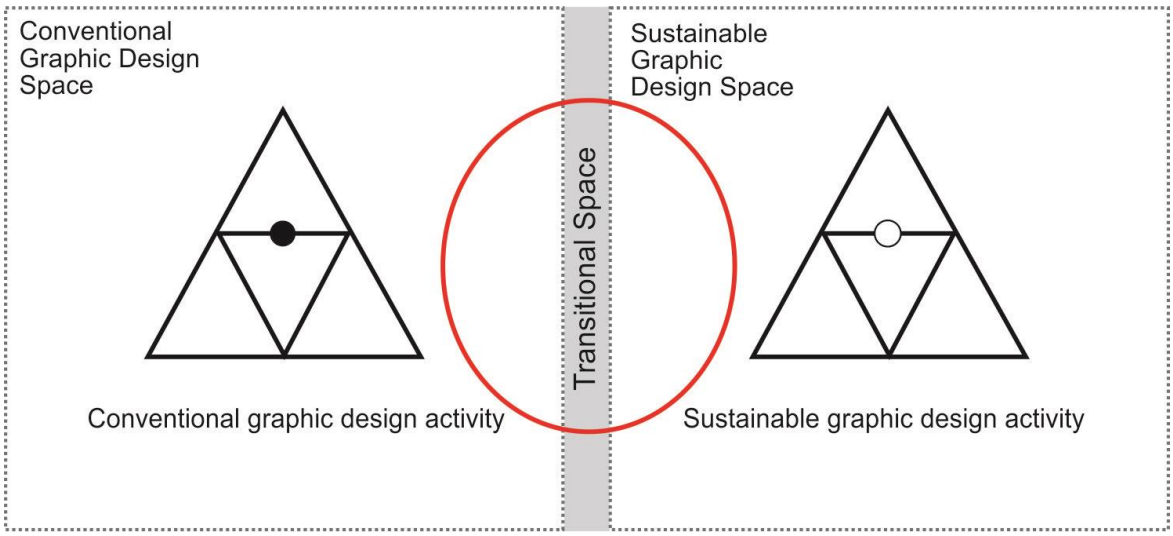

Figure 3.2: The transitional space for moving from conventional graphics design practices to sustainable graphic design practices (Author's construct, 2019)

3.5 Human-centred design as an adjustable research methodological framework for graphic design research

Human-centred design was positioned as a research methodological framework in this research. The human-centred design served as a placeholder of approaches of data gathering that were employed to examine graphic design practices through the lens of sustainability. It helped to unveil the challenges and the emerging solutions in graphic design practices in order to advance the concept of sustainability through a local context. To do this, all the various approaches in the human-centred design were reviewed first. The applicable human-centred approaches were then selected based on research questions. The essence of positioning human-centred design as a research methodological framework was to help gather in-depth data by applying a designerly approach. The next sections, therefore, expands on human-centred design to unveil its various facets.

Human-centred design is a design approach which creates a platform for researchers and designers to gather data on users or design practitioners and attempt to collaborate with them for developing products and services to meet users' needs and preferences (Steen 2011:45; Gordon et al. 2017:3). Human-centred design's underpinning is to develop a rich understanding of human experience as the foundation for the design of products, services, and experiences (Dunne, 2009:6). The experiences encompass not just the product itself, but services, interactions, processes, and the environment in daily realities (Dunne, 2009:6). The human-centred design thus has become the panacea for bridging the gap between a product or a service's functions and its users' satisfaction. Therefore, there is a proliferation in the use of human-centred design by many organisations to produce solutions that address problems to pave way for development (Gordon et al. 2017:3).

However, some scholars argue against the relevance of human-centred design as a means of creating products and services for people. One of such scholars is Norman (2005:14) who in his article *Human Centred Design Considered Harmful,* argues that most products in the world have been created or designed without employing the services of human-centred design, yet those products are used efficiently, especially the modern technological gadgets. Norman (2005:16) believes that instead of focusing on humans, which he perceives as a limitation, designers should rather focus on the activity or task of products or services rendered in order to perpetuate absolute innovation and transformation for development. Norman (2005:16) advances that it is people who adapt to technology but not vice versa, therefore the creation of products should be activity-centred to speed up development. Lee (2012:15) counters Norman's assertions through the exposition that human-centred design is based on a clear understanding of users, tasks [activity]…. The task mentioned is the central function of a product but an interaction with the product is needed to produce the function, therefore human-centred design cannot be ignored, downplayed or replaced. Lee (2012:6) advances his exposition that human-centred design should be culturally specific and not standardized in order to address the holistic needs of users within a locality innovatively. Steen (2011:47) however, advances that the practice of human-centred design is worthwhile but it has tensions that need to be dealt with for effective and efficient use of it. Steen (2011:47) postulates that human-centred design practitioners ought to combine and balance their own knowledge and ideas with that of users' knowledge and ideas by deciding when and how, and to what extent, to be human-centred. According to Steen (2011:48), the six common methods of human-centred design are participatory design; ethnography; the lead-user approach; contextual design; co-design; and empathic design as captured in Figure 3.3.

From Figure 3.3 it is clear that there are overlapping areas among the various methods illuminating that no method is used distinctively, thus one method may contain tools and techniques used in order methods. For instance, empathic design uses tools and techniques from co-design and contextual design while participatory design uses tools from all the other methods: ethnography, the lead-user approach, contextual design, co-design, and empathic design. In using human-centred design approaches as research methodological framework, the purpose of the research should be taken into account. Figure 3.3 indicates the purposes of using the approaches at the four sides close to the respective methods. Though the discussions on human-centred design so far look at products and how humans use products, in the case of this research, I look at innovative sustainable graphic design practices as the product and graphic designers as the users of the sustainable innovations. The next sub-sections cover approaches of human-centred design.

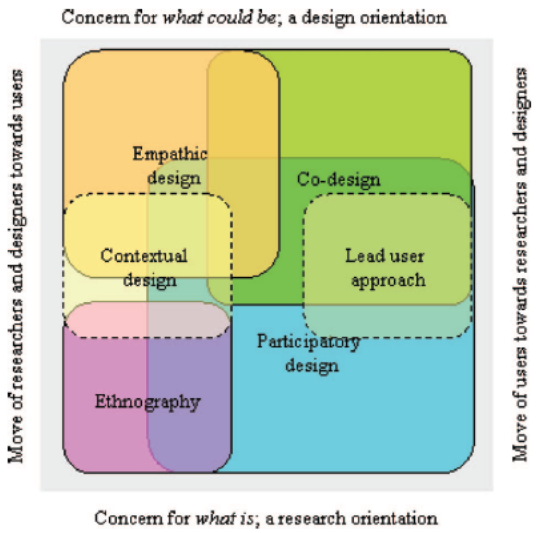

Figure 3.3 Different human-centred design approaches, with different starting points and emphases (Source: Steen, 2011:48)

3.5.1 Empathic design approach

Empathic design surfaced from designers' quest to move from inflexible designs developed with the absolute understanding of the user to designs that factor in emotions, experiences and meaningful everyday practices of the user (Mattelmäki et al. 2014:67). The prerequisite for empathic design is an open-ended, collaborative, observational and curious attitude aided by visual information for understanding users in their own contexts (Mattelmäki et al., 2014:67). Mattelmäki et al. (2014:68) believe strongly that empathic design was derived from cultural probes and can be used in research programmes. The central aim of the empathic design is to get designers to move into the lives of users of a service or product in order to produce a service or product or intervention that meets users' needs (Koskinen, Mattelmäki & Battarbee, 2003). Empathy in design is achieved through three techniques: direct contact with users, communication mediated by user researchers and imagination (van Rijn et al. 2011:66). All these three techniques can be summed up as processes a designer needs to use to position designers or researchers to emotionally relate to a user in order to design for users' satisfaction.

Svela and Keitsch (2016:2) argue that the empathic state consists of two components, one is understanding and perspective-taking and the other is related to the emotional connection. This positions empathy in design as not only emotionally related but also cognitively focused. Thus empathy is not just about feelings but covers intellectual reflections on the feelings (Svela & Keitsch, 2016:2). The challenge mostly encountered with the practice of empathy in design is related to balancing affective and cognitive components in order to produce the right service and products (Svela & Keitsch, 2016:2). The affective aspect

explores emotional responses, feelings and identifying with while the cognitive covers understanding, perspective taking and imaginations (Kouprie & Visser, 2009:442). Kouprie and Visser (2009:444) posit that the framework for empathy in design consists of (1) discovery, (2) immersion, (3) connection and (4) detachment. All these are done for a better understanding of a design problem in order to know the experiences expected by the users or the intervention needed to solve the problem at hand.

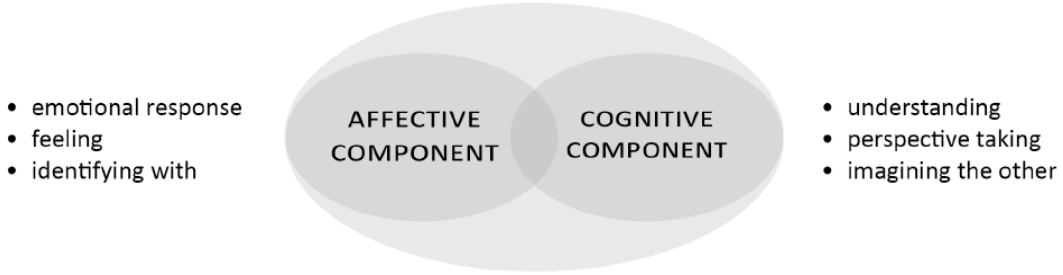

Figure 3.4: The components of empathy (Source: Kouprie & Visser, 2009:442)

With the empathy design method, information is gathered off-site in most cases through the use of simulators. The utmost challenge likely to occur in this method is that since the designers are not on-site with users to see or encounter how the services or products are used they are likely to picture scenarios wrongly or misinterpret the users since the users at times lack words to explain the emotions and experiences encountered. This implies that when empathy alone is used as a method for information gathering in research that requires field data gathering there will be experiential loopholes in the data gathered. However, it can still be used to augment other methods. The description of empathy gives a clear indication that the tool mostly used with this is interview (Mattelmäki et al. 2014:68). With the understanding of empathy, the usage of interview employs both the affective and cognitive components in order to make the data gathered relevant. This approach was therefore relevant to the study as far as gathering data through interview was a necessity in the graphic designers' practices. The affective and the cognitive components were essential during and after the data gathering for connecting and reflecting on the empirical data gathered on the graphic design practices.

3.5.2 Ethnography: a tool for up-close personal experience

Ethnography is mostly used in social sciences as a research approach for conducting an up-close and personal experience using participatory observation, interviews and archival documents (Anderson et al. 2016:2). Ethnography as a human-centred design method is purposely situated in the domain of anti-ethnocentrism, which counters the notion of one's inability to perceive someone else's culture (Anderson et al. 2016:3). Ethnography was derived from anthropology and sociology for the study of cultures, however, in the 21st

century, it has undergone tremendous changes to envelop a broad spectrum of spaces: schooling, public health, rural and urban development, consumers and consumer goods (Anderson et al. 2016:2). The ethnographic approach can, therefore, be used to study a myriad of phenomena.

The central idea of ethnography from a modernised approach is for one to understand the culture of someone, profession or discipline which occurs through studying the everyday practices or activities and the associated meanings within a field's context (Anderson et al. 2016:4). The understanding by the designers and researchers informs the design of their products, services and interventions (Steen, 2008:38; Sollie, 2015:5). Ethnography thus has become a tool for innovation of products and services that are created not through intuition but through a research-driven approach. Among companies that have been using ethnography is the *Xerox Palo Alto Research Centre*, which was the first to use ethnography in observing how users of their products carry out their daily activities in the field (Sanders, 2002:5) and has helped them to generate a technological product with human centeredness as the driving force. The tools that are mostly used for ethnographic data gathering are interview guides, all forms of observations and workshops (Steen 2008:38). In the conduct of ethnography in design, the ethnomethodological processes use four main principles which are natural settings, holism, description of the activity, informant's point of view (Blomberg & Karasti 2012:5). Blomberg and Karasti (2012:5) further elaborate on these principles which are as follows:

1. *Natural setting: In this context to understand the world means that one needs to encounter it first-hand through field research work that deals with the study of people in their everyday activities.*
2. *Holism: Behaviours are understood by the researcher based on how they have embedded the culture or activity of those being studied.*
3. *Description of activity: The description of the activities is not exaggerated or altered to maintain the integrity of the data by researchers or researcher designers. Thus reports are credible and authentic.*
4. *Informant's point of view: The understanding of culture is solely centred on the people's being studied and not from the researchers" point of view.*

Aside from all these capabilities, ethnographic practices might have limitation in observational approach in data gathering, especially in areas where the researcher is conducting the ethnography without in-depth knowledge in the field (Blomberg & Karasti, 2012:22). This also implies that in a situation where the researcher is an expert, the observational approach is ideal and preferred for in-depth data gathering. It is assumed that it will lead to *'quick and dirty'* or *'rapid'* ethnography, which fails to uncover details of situations (Blomberg & Karasti, 2012:22). This implies that to conduct an effective

ethnography, the field research must be done by an expert in that area under investigation or study.

Looking critically at the facets of ethnography as a data-gathering approach, it was worthwhile and was adapted for this study because the research sought to examine graphic design practices to unearth the latent triggers in the graphic design practices through participant observation. It also used an ethnographic interview for understanding actions taken by the informants during participant observation. The details on ethnography have been captured in Chapter 4. The next sub-topic elaborates on co-design from the human-centred design as an adjustable methodological framework for its usability in this research.

3.5.3 Co-design: bringing experts and non-experts together for design solutions

Co-design approach has been prevalent amongst design disciplines for a considerable length of time, especially in industrial and software design and has now gained acceptance and patronage in non-product oriented spaces (Crates & Hawkins, 2016:7). Co-design as a design intervention method was created to counter exclusion in the design process in order to factor the input of non-designers in the product or service being created. This intervention method is a leap-frog from the old method of designing that capitalises on involving users and consumers at the tail end of the design process. In other methods, prototypes are shown to prospective users and consumers for their input without necessarily engaging them in conversation during the design process. Co-design is different, it involves consumers and users of products and services in the design process with the notion that everyone's ideas count and can lead to improvements and innovation in the created products or services to meet the users and consumers' needs (Ingrid, 2010:3). Sanders and Stappers (2008:6) share a common view that co-design is a creative activity that engages designers and non-designers to work together in the design development process.

Unlike design empathy, contextual design and ethnographic design, which receive information and utilise it for creation of value-led products and services without involving the users in the design process, co-design, which connotes corporative goes an extra mile to include the users in the design processes for wholesome idea generation (Steen, 2008:42). Co-design has become a common technique which currently is used in most projects from artefact creation to public service delivery in most Western spaces. For instance, in the space of business, there is growth in the acceptance and practice of co-design for harnessing clients ideas, designers' expert support and users input to inform product innovation (Ingrid, 2010:3). Within the communities, patriotic or concerned citizens leverage the strength of co-design to advocate solutions and initiatives that propel the development of

their communities. By implication, co-design is a platform for cross-pollination of ideas from many perspectives, people and disciplines to generate real workable solutions to complex issues (Ingrid, 2010:6). Co-design as a person-centred or user-centred approach starts with the desired end, focuses on developing real workable solutions and utilises graphics to make solutions real and experiential (Ingrid, 2010:6).

There are various tools, methods and approaches for co-design. The type of project determines what tool, method or approach to use. According to WACOSS (2016:3), for co-design to be successful in its usage the following principles should be adhered to:

1. *Clarity of purpose: There should be clarity in the choice of process, parties to be involved and the space for the co-design.*
2. *Inclusiveness: All concerned parties should be featured in the design development phase and not as after the design as critics.*
3. *Equal partnership: Everyone's input counts and should not be looked down upon or rejected without any constructive justification.*
4. *Respect and trust: "This requires a relationship based on trust, respect, openness and transparency that enables all participants to participate meaningfully, using methods of communication that enhance capacity to share ideas effectively"*
5. *Data-driven: Co-design should be built on data from the field and not by "speculations"*
6. *Comprehensive: The process should involve design, planning and evaluation, as well as in some cases, implementation or delivery.*
7. *Iterative: Participants should be made aware to explore, make mistakes, and learn from the mistakes to progressively design services that will deliver as expected.*

Other authors of co-design also propose different principles. For instance, Francis (2015:6) proposes five steps:

1. *Involve service users early*
2. *Create an environment where service users and service professionals can talk*
3. *Work on an equal footing*
4. *Start by understanding the outcomes, not just the service*
5. *Take an asset-based approach*

There are similarities in these two co-design principles but there are differences as well indicating that there are no fast and hard rules governing the principles one uses in co-design. On the grounds of tools and methods, the commonly used tools for co-design are customer user mapping, ideas farm and scenarios (Francis, 2015:7-10). Just like any other design development, co-design utilises the double diamond design process for design development.

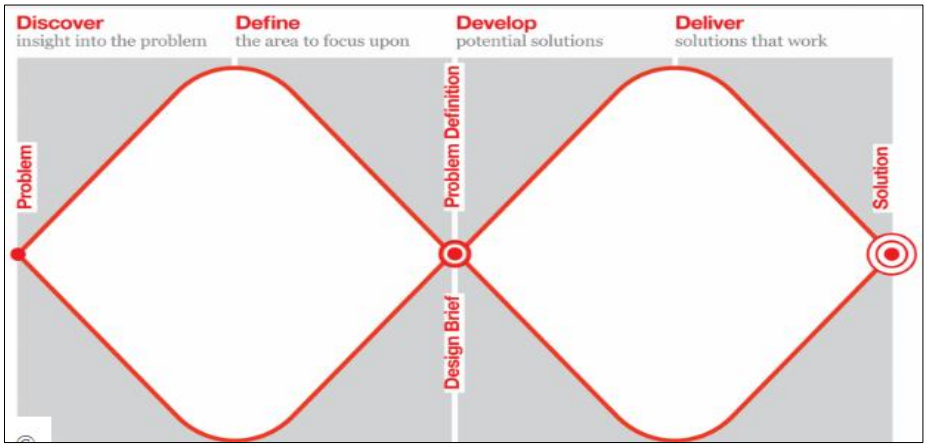

Figure 3.5: The double diamond process (Design Council, 2018a)

Crates and Hawkins (2016:20) argue that co-design is a divergent and convergent process that requires in-depth exploration into the problem under investigation, experimentation into possible solutions and enterprising into action the conceptual solutions and its reflections. Crates and Hawkins (2016:20) further argue that the double diamond design process is incomplete for co-design and will require an extra process for a full design development to be achieved. Crates & Hawkins (2016:20) propose a three-diamond process: explore experiment and enterprise. Figure 3.6 gives details of the three diamond design process for co-design.

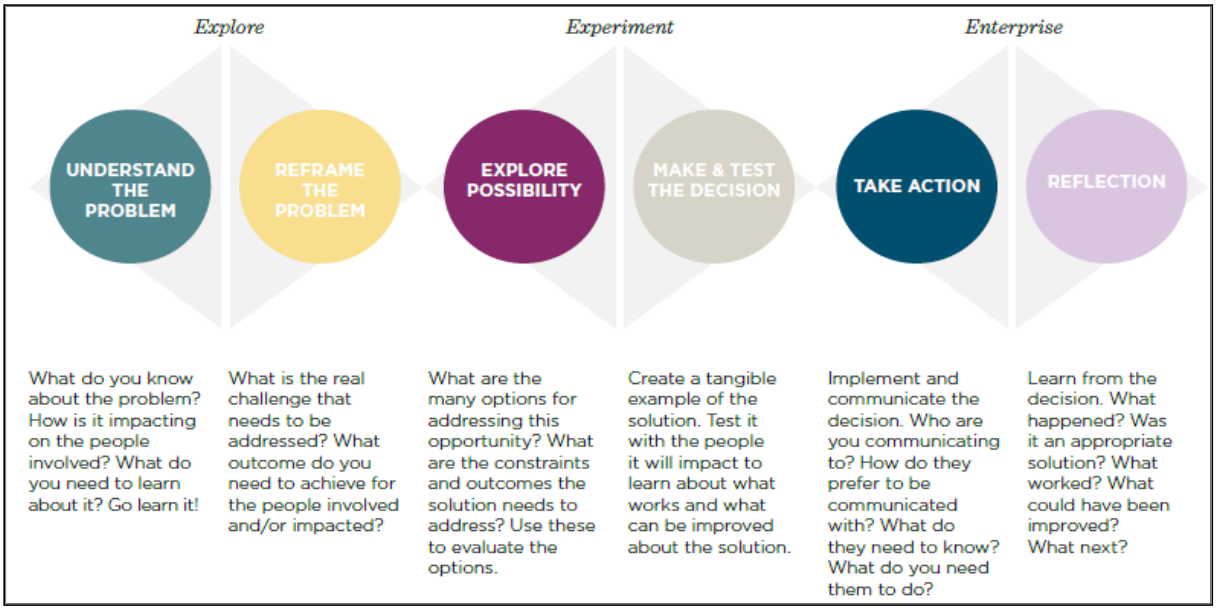

Figure 3.6 Three diamond design process for co-design (Crates & Hawkins, 2016:20)

The challenge with co-design is that some designers find it difficult to shift from the old authoritarian perspective of the designer where he/she is the expert and his/her ideas are

the best. Non-designers also have ideas and must be allowed to express them making sure that their ideas are factored into the design process. For instance, research conducted to explore the co-design experience of some designers revealed that the designers struggle to overcome their usual solo-design dominating conversations because the boundaries of co-design are still blurry for them (Cruickshank et. al. 2013:3). This challenge is labelled as resistant to co-design change (Bovill et al. 2015:195). Bovill et al. (2015:102) discovered that company structures or institutional structures may also create friction for smooth co-design idea generation. Bovill et al. (2015:103) also identified that another challenge with co-design is participant selection for the co-design, who should be selected and on what grounds should the person be selected? These are the challenges that come along with the use of co-design for design development and needs to be researched further.

The exposition on co-design makes it clear that it is solution-oriented. However, Figure 3.6 indicates that co-design processes comprise of three diamonds instead. This makes it clear that any of the diamonds could be used for research based on the aim of the research. In this regard, since this research is solely on exploratory and examination of graphic design practices, the explore diamond in Figure 3.6 was used as a guide for the selected approaches but was not selected as part of the core components of the methodological framework since it is implied. Thus the complete framework will be discussed after the exposition on all the approaches.

3.5.4 Contextual approach

The challenge of losing touch with reality in the case of empathic design is addressed in contextual design which is customer centred or participatory design-oriented. Contextual design capitalises on the use of customer data to drive the design process towards solution provision. With this method, the designer first collects data from the user or customer through ethnographic techniques such as observation and interviewing then invite the users to be co-designers by involving them in the design process (Southern Illinois University, 2015:3). Contextual design as a process focuses on customers or users and their work, avoiding reliance solely on team members' personal opinions, anecdotes, or unsubstantiated claims about users' preferences (Beyer & Holtzblatt, 1999:3). Beyer et al. (2004:51) posit that the contextual design method consists of:

1. *Contextual inquiry: Field interviews and observations are used to collect data from users in their workplace or natural settings to ensure that designers do not depend on self-reported practices of users.*
2. *Interpretation sessions and work modelling: Interviews are retold, key points (affinity notes) are captured and models representing user's work practice or daily activity use of a service or product are drawn. This allows the designer researcher to share*

findings with his/her team to establish a common understanding of the user in a form that will drive the design.

3. *Consolidation and affinity-building: Gathered data from different users are consolidated into a larger picture using affinity notes to create an affinity diagram that reflects the hierarchical needs of users.*
4. *Visioning: Reviews on service or product usage models are done. The service or products are reinvented to transform their usage in a form of hand-drawn sketches. Storyboards are used to detail the designs.*
5. *The User Environment Design: The newly invented hand-drawn service or product shows its appropriate functions eliciting a natural flow of a service or product usage.*
6. *Paper prototypes and mock-up interviews: The designed service or products on paper are shown to users for their comments.*

The contextual design approach as a design process proves to be reliable for product or service development due to the use of ethnography as an onsite data gathering tool and the use of co-design for idea development. This, however, needs smooth collaboration between the designers and the users. The review on the contextual approach makes it usable for this research. However, since this research did not opt for developing a solution only the first two phases of the contextual approach was adopted for this research: contextual inquiry and the interpretation sessions (Beyer et al. 2004:51) for gathering the data on the graphic design practices.

3.5.5 Lead-user approach

Empirical evidence has shown that users influence the development of new products or [services] as a result of businesses or firms trying to meet the request of users (Luthje & Herstatt 2004:555). The users who most influence the creation of new products are called lead users. Lead users are mostly clients or customers whose needs exceed the capabilities of a service or a product on the market and thus have innovatively improvised solutions to solve their specific needs (Sudharshan et al. 2006:1). Lead users are different from ordinary users and are solution-oriented (Luthje & Herstatt, 2004:556). They are therefore smart in product development due to their zeal to have innovative services or products capable of meeting their needs (Luthje & Herstatt, 2004:558). Luthje and Herstatt (2004:561) propose that the lead user method for product or service development utilises four processes which are:

Step 1: Start of the lead user process

a) *Building an interdisciplinary team*
b) *Defining the target market*
c) *Defining the goals of the lead user involvement*

Step 2: Identification of needs and trends

a) *Interviews with experts (market/technology)*
b) *Scanning of literature, internet, databanks*
c) *Selection of most attractive trends*

Step 3: Identification of lead users

a) *Networking based search for lead users*
b) *Investigation of analogous markets*
c) *Screening of first ideas and solutions generated by lead users*

Step 4: Concept Design

a) *Workshop with lead users to generate or to improve product concepts*
b) *Evaluation and documentation of the concepts*

In using the Lead User method, upon critical reflections, it centres on the identification of the lead users' and assigning task because they serve as the driving force behind the creation of the services and products. Though the method gives the details needed for the selection of the lead users, there are limited theoretical backings to justify the approach for the selection of the lead users (Luthje & Herstatt, 2004:554). The other challenges identified according to Dignell and Mattila (2007: i) in their published thesis are that the envisioned lead user may not exist or the person with the innovative knowledge about the product may not necessarily be a lead user and therefore the concept of a lead user is not even appropriate. Dignell and Mattila (2007:13) further asserted that some studies have observed challenges with the selection processes, participatory involvement as well as the time allocation for projects. Thus not all researchers have accepted it for product innovation due to how complicated the method, is taking into cognisance the unsolved challenges that come with it (Dignell & Mattila, 2007:13).

The exposition on this approach connotes that this approach was not used as far as there were unresolved complexities on it as an approach. Therefore, it was not included in the selected adjustable research methodological framework because none of the steps was applicable as far as the aim of the research was concerned.

3.5.6 Participatory design: key principles, tools and methods for engagement

The participatory design approach originated from Scandinavia purposely to give workers a room to engage in decision making that concerns them at their workplaces (Spinuzzi, 2005:163). Since then, participatory design has become a conventional design method practised in mainstream design disciplines (Bannon & Ehn, 2018:40). Participatory design is not an end product but a research method that utilises a set of methods or approaches such as user-centred design or user-driven design or experiential design for [creation of services

or products] (Bannon & Ehn, 2018:41; Spinuzzi, 2005:163). Unlike traditional designer-led culture, which leaves little space for the inclusion of other design visions from non-designers, participatory design is an anti-designer-led culture that creates a platform for the inclusion of design visions form all participants in the design process (Bannon & Ehn, 2018:41). Participatory design is holistically defined as a design practise that engages non-designers from different disciplines in co-design activities throughout the design process (Sanders, Brandt & Binder, 2010:1). Participatory design is thus an interdisciplinary tool that operates efficiently through involving different actors from different fields with various skills, interest and experiences (Sanders, Brandt & Binder, 2010:1). In participatory design participants or the users are recognised as experts having tacit knowledge and skills which are needed in the design process (Steen, 2008:37).

With the exception of ethnography and empathic design which are solely related to data gathering, contextual, co-design and lead-user design methods of human-centred design are participatory oriented. The only difference between the four participatory approaches is the nature of the users involved. Sanders et al. (2010:2) in their bid to concretise and make versatile the use of participatory design, has proposed a framework that provides design tools and techniques for engaging non-designers. Sanders et al. (2010:2) further disclose that the framework has three areas of focus: form, purpose and context.

1. *The form elucidates the kind of action occurring among participants in an activity captured as making, telling and enacting.*
2. *The purpose describes why the tools and techniques are used:*
    a. *for probing participants.*
    b. *for priming participants for immersion in the area of interest.*
    c. *for digging into the experiences of participants for better comprehension.*
    d. *for the generation of ideas or design concepts for the future.*
3. *The context defines where and how the tools and techniques are used:*
    a. *group size and composition*
    b. *face-to-face*
    c. *online*

Table 3.2 gives details of the framework for participatory design. The essence of the well-tabulated framework is to help in the right selection of tools and technologies for the appropriate task. Though the framework is clear there is limited literature that points to its users and that can be ascribed to the open-ended nature of the participatory design. More so it is an emerging tool for collaboration in design that is going through transformational phases with rigour scrutiny by researchers before it is streamlined for standard usage.

Table 3.1: Participatory Framework outlining tools and techniques

TOOLS AND TECHNIQUES	PROBE	PRIME	UNDERSTAND	GENERATE
MAKING TANGIBLE THINGS				
2D collages using visual and verbal triggers on backgrounds with timelines, circles, etc.	X	X	X	X
2D mappings using visual and verbal components on patterned backgrounds	X	X	X	
3-D mock-ups using e.g. foam, clay, Legos or Velcro-modelling	X	X	X	
TALKING, TELLING AND EXPLAINING				
Diaries and daily logs through writing, drawing, blogs, photos, video, etc.	X	X	X	
Stories and storyboarding through writing, drawing, blogs, wikis, photos, video, etc.	X	X	X	
Cards to organize, categorize and prioritize ideas. The cards may contain video snippets, incidents, signs, traces, moments, photos, domains, technologies, templates and what if provocations.			X	X
ACTING, ENACTING AND PLAYING				
Game boards and game pieces and rules for playing		X	X	X
Props and black boxes			X	X
Envisioning and enactment by setting users in future situations				X
improvisation				X
Acting out, skits and play-acting			X	X

(Source: Sanders et al. 2010:2-3)

Field Informatics Research group in Kyoto University (2010) also proposes a similar set of methods for participatory design arguing that though it is necessary to use the methods what actually brings value is the interactions among designers, researchers and users. Table 3.3 shows the method and the description of the method for easy usage.

Table 3.2: Methods of participatory design

Method	**Description**
Workshops	Users and designers work together to create a design, vision, policy or understanding of the current setting jointly in a focused manner.
Ethnography	Designers conduct an in-depth observational study of users in order to obtain a first-hand understanding of users' situation.
Co-prototyping	Users experience potential technologies with a prototype and modify the prototype cooperatively with designers.
Mock-ups	Designers create mock-ups, often using cardboard, to stimulate users to think about the potential technology and new work practice
Card Sorting	Designers learn users' information environment by having the users write down types of information on cards and group them into piles.
User Design	Users are given a design tool to create a design on their own. The design tool needs to be easy enough for [non-designers] to use.

(Source: Kyoto University, 2010)

To get more insight into the participatory design tools and methods it is necessary to explore another author(s) stands in order to streamline the use of tools and methods for this research due to an array of tools and methods utilised for different projects on grounds of multiple views. A review conducted by Muller (2003:3) disclosed rather the spaces within which participatory design occurs before elaborating on the methods and tools, after. Having reviewed several articles on participatory design in computer-related subjects, Muller (2003:6) discovered that participatory design consists of *abstract, hybrid* and *concrete* spaces. The *abstract* space is the domain of the designers, *hybrid* space is the domain for designers, users and other participants while the *concrete* space is the domain for the end-users. To understand the user, the designer needs to enter the user's space and the vice-versa. The *hybrid* space contributes to the understanding of parties involved, should they move to the opposite spaces. Muller (2003:7), proposes that for the participatory design to be efficient and successful, the hybrid space should be recognised as very important. Muller (2003:7) has therefore proposed tools and methods that need to be used in the hybrid space during the participatory design process, which are:

1. *Siting [Environment]: The site for the participatory design creates the mood that influences user involvement, the understanding, experience and perspective and invariably the outcome of the designs, be it a product, system or service (Muller 2003:8).*
2. *Workshop (hybrid space): They are mostly held to assist participants from diverse disciplines to communicate ideas, commit to shared goals, strategies and outcomes (Muller, 2003:9). The activities done in a participatory design workshop include:*
    a. *Construction of collage focused on thinking.*
    b. *Mapping or laying out envisioned work area, service or product.*

c. *Storytelling and making descriptive artefacts*

3. *Stories: story-collection and story-telling are used for igniting conversation, analysis or feedback (Muller, 2003:11). In storytelling sketches, dramas and photographs are used.*
4. *Games: Cards and icon design games are used to paint possibilities concerning the outcome of designs.*
5. *Constructions: prototyping to envision future technologies, services, products and systems*

Upon a careful reflection on this approach extensively, the methods used by different researchers in participatory design have similarities or are eventually the same. Almost all the techniques used by researchers focused on social innovations, information technology, products generation and service systems. In the context of this research, it was not used because the research was exploratory oriented and creation oriented. Thus approach was not of use to this research. However, it might be useful when the identified challenges need solutions. It will therefore probably be captured under further studies section of this thesis.

3.5.7 The implications of the review of human-centred design as a methodological framework for this research: an adjustable perspective

Human-centred design was conceptualised as an adjustable methodological framework for this research based on the adaption of the human-centred approach for undertaking this study. From the review, a human-centred framework consists of six approaches, which are not mutually exclusive because there are overlapping in terms of tools used by the different approaches. Out of the six approaches, three were used based on the aim of the research. The three were empathic, ethnography and contextual approaches, which were all used for data gathering as depicted in Figure 3.7. Although all the approaches end up with the creation of some sort, this research just used only the inquiry phases of the selected human-centred approaches because this research was primarily to explore and examine, and not to necessarily create but rather to capitalise on the results as a means to redirect the path of sustainable graphic design practices.

These three were the research methodological framework upon which the research method was built. The tools used in Chapter 4 were all derived from the selected human-centred approaches. The tools used from ethnography approach were participant observation and document review. In the case of empathic and contextual approaches, interviews and overt observation were used. Figure 3.7 gives a concrete summary of the approaches and the associated tools, which have been elaborated in Chapter 4 of this thesis.

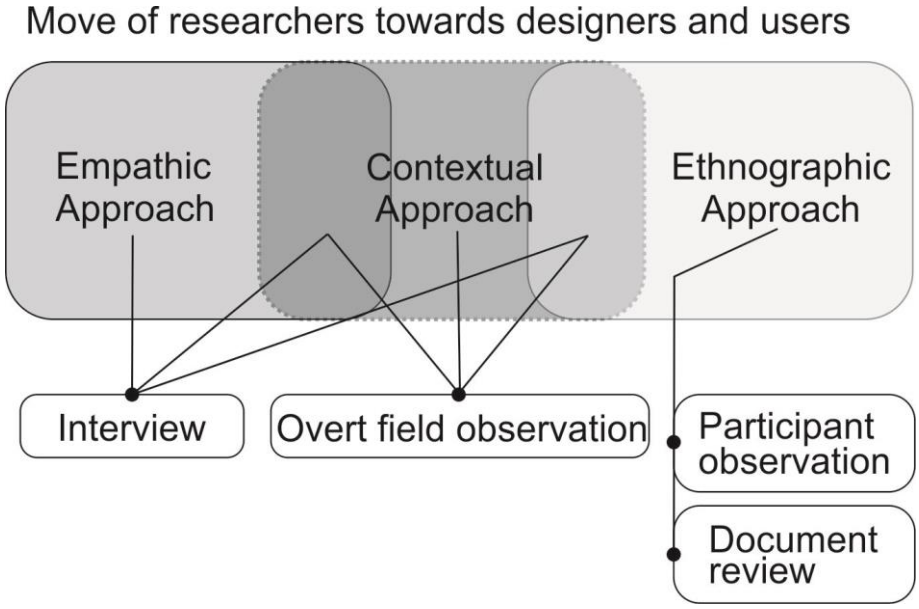

Figure 3.7: Adjustable methodological framework
(Selected human-centred approaches with associated data gathering tools)
(Author's construct, 2019)

The selection of the empathic approach was based on the strengths of the approach, which is built on understanding and connection to scenarios during an interview by the researcher. This approach, therefore, gives the researcher a deeper understanding which manifests in the report produced. Contextual and ethnographic approaches were also selected because they are both approaches used for on-site data gathering, which gives room for a researcher to personally experience what is observed. This enhances the descriptions of the experienced scenarios through the lens of interpretivism. The next sub-topic deals with conceptualisation, which would be utilised in Chapter 7 for the re-conceptualisation of sustainable graphic design practices based on the research outcome.

3.6 The conceptualisation for re-conceptualising of sustainable graphic design practices

In uncovering the meaning of conceptualisation, I will briefly and firstly define design from the traditional perspective as a set of ideas governed by principles to produce a solution(s) (Andreasen, 2015:25). Bettina (2003:12) sees design as a mindful decision-making process by which information (an idea) created is transformed into a product (tangible) or service (intangible). Design is also defined by Taura and Nagai (2009:3) as a process of creating a desired image towards the future. From all these three definitions of design, the run-through words are the creation of ideas to solve problems which are both tangible and intangible. According to the Design Council (2018:13) design in the 21st Century is not restricted by professions because the "*new"* design is built on design skills, principles and practices for

solving problems beyond the traditional discipline of design. The design has, therefore, become an active *'machine'* that companies are leveraging to gain competitive advantage (Bettina, 2003:13). It also serves as a receptor for different sectors, disciplines and culture with the ultimate purpose of meeting the needs of people through but not limited to facilitating close collaborations across multiple stakeholders to overshadow common challenges (Design Council, 2017:6). The design is also interpreted as an outcome, creative activity or the process by which information aid in the creation of a tangible outcome (Bettina, 2003:12). Bettina (2003:12) further expatiates that in terms of process, design can be categorised into three types:

1. *Conceptual design: the process in which ideas are generated with a view to fulfilling an objective.*
2. *Embodiment design: the process in which a structured development of the preferred concept is carried out.*
3. *Detail design: With this, the precise shape, dimension and tolerances are specified, the material selection is confirmed and the method of manufacture is considered for every individual part of the product or service.*

With the understanding of design, let us proceed with the definition of concept before the two are combined. A concept is a mental presentation which stands for or represents something in the actual world (Turton, 2003:2). Therefore conceptualisation in design refers to the manipulation and combinations of ideas [images] to solve a problem by elucidating a product or a service's utility and value in a form of the object of knowledge or a mental presentation (Andreasen et al. 2015:25; Turton, 2003:2). In digging further, conceptualisation in design is also the art of putting together ideas with the [aid of drawing tools] to make thoughts and imaginations [visible] to form a design proposal (Andreasen et al. 2015:25). The design proposal is composed of elements related to need, context, intention, possibilities to produce a 'good solution' (Andreasen et al. 2015:33). The conceptualisation is not a one-touch method for solution provision, rather it is characterised by iterations until a required design proposal is achieved to meet the set objectives.

There are many approaches and aids for conceptualisation based on the design discipline. However, foundationally, conceptualisation is driven by intuition, creativity, analysis and synthesis (Horváth, 2000:4). Among all the approaches, criticism and evaluation are so important since they 'purify' the utility and value of created concepts (Horváth, 2000:4). The challenges of conceptualisation mostly occur when concepts are subjected to criticism and evaluation before a conclusion is drawn on the concept impeding the flow of ideas (Horváth, 2000:4). The conceptualisation is thus the front-end of the downstream process of product or [service] development (Horváth, 2000:5). As seen in the design process, conceptualisation in

design is meant to feed embodiment, detailed and documentation design processes (Bettina, 2003:12). The conceptualisation is supposed to be done simultaneously [to facilitate the flow of ideas] (Horváth, 2000:6). In a nutshell, the conceptual design gives a snapshot of a situation or an ideal situation for comprehension, triggering discussions and as a foundational plan for creating tangible and intangible services and products. It is therefore indispensable when it comes to creating services and products for a better tomorrow or sustainable futures. This approach was therefore used in Chapter 7 for the re-conceptualisation of sustainable graphic design practices through the lens of cosmopolitan localism. The next topic deals with the conceptual framework used in this research.

3.7 The conceptual framework

The research was driven by three components which were Activity Theory, the Sustainability Development Analytical Grid and human-centred approaches. Activity Theory and the Sustainability Analytical Grid were amalgamated to create the sub-research questions for the data gathering and also for examination, analysis and presentation of the findings. The human-centred approaches were also used as the means in the data-gathering processes. After the data was gathered, the Sustainability Development Analytical Grid together with Activity Theory were used to analyse and examine the findings to sift the challenges to sustainability in the graphic design practices encountered as well as the sustainable aspect of the graphic designers' practices from different graphic design firms.

Figure 3.8 shows the outcome of the amalgamation between Activity Theory and the Sustainability Development Analytical Grid. The amalgamation was done because it made data gathering easy. Activity Theory made it possible through the separation of the various units in the graphic design practices. The units were then contextualised with allocated dimensions of the Sustainability Development Analytical Grid. Though all the Sustainability Development Analytical Grid dimensions are supposed to be considered at the subjects' space during the designing, selection of materials and choice of production lines, the dimensions were allocated to specific units because the dimensions manifest at their respective units. This implies that the assessment of a dimension can be done at its related unit on the Activity Theory framework only.

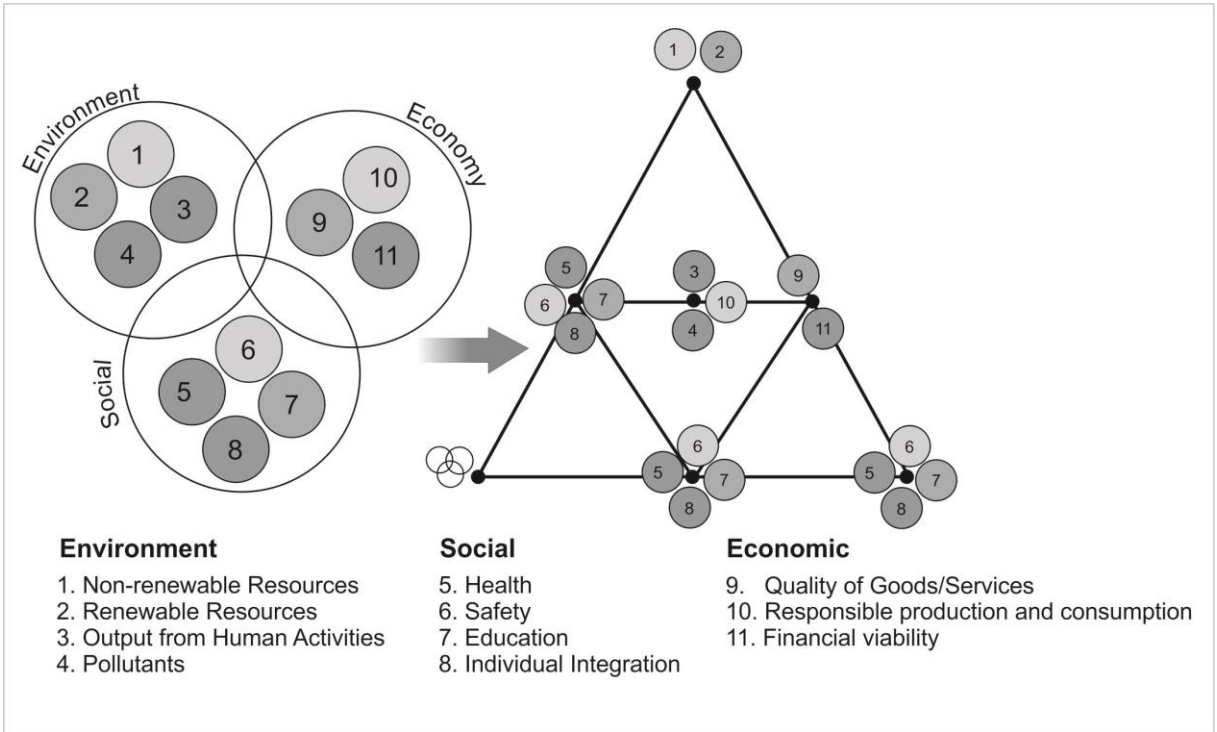

Figure 3.8: Amalgamation of Activity Theory and Sustainability Development Analytical Grid (Author's construct, 2019)

After the amalgamation, the outcome was used as a guide for setting interview questions and observational protocol for the data gathering through the human-centred approaches adapted as the methodological framework. The gathered data were then analysed through the Sustainability Development Analytical Grid. This gave birth to two sets of data. The first set was challenges to sustainability in graphic design practices and the second was localised sustainable graphic design solutions to some of the challenges witnessed.

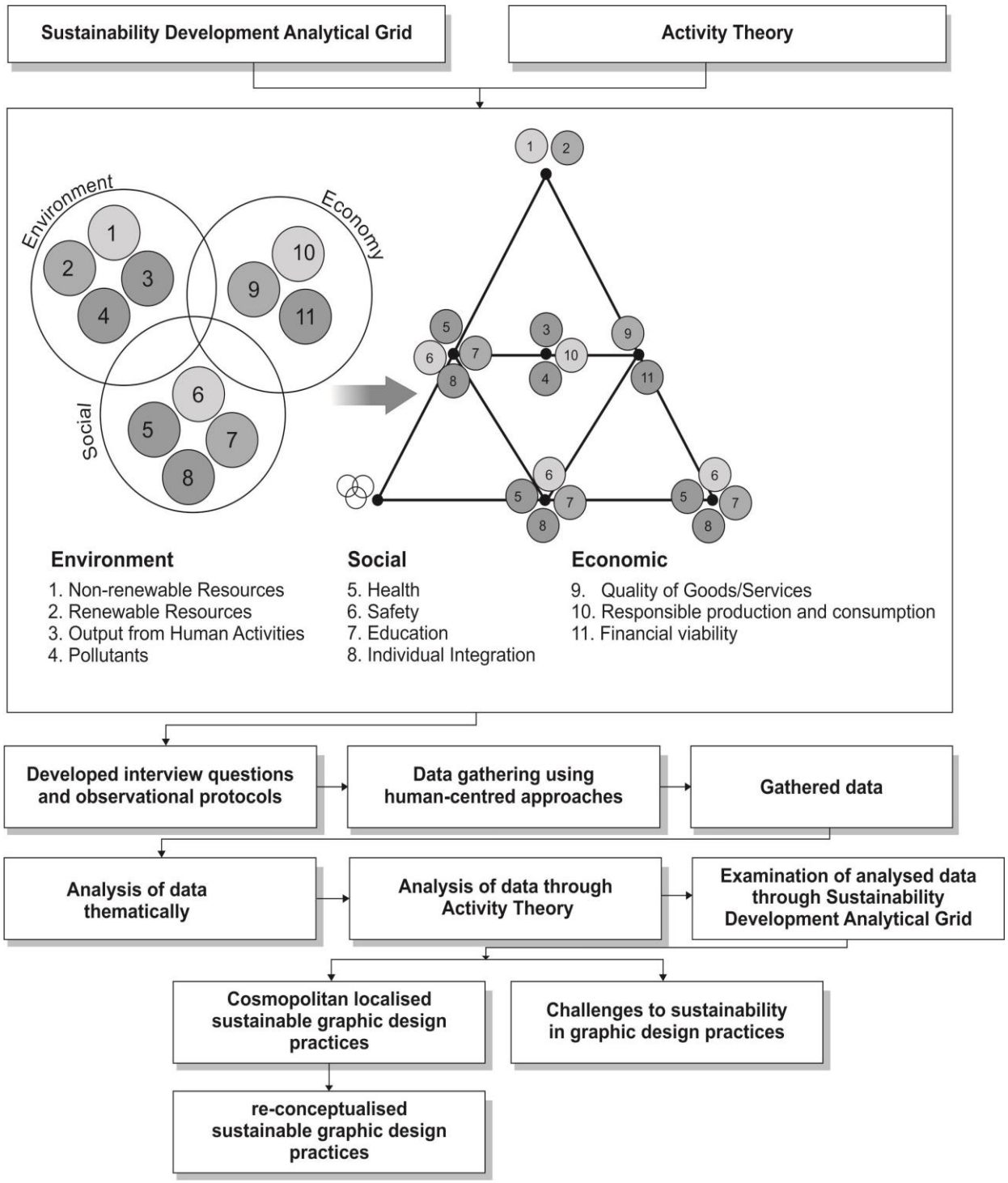

Figure 3.9: The conceptual framework (Author's construct, 2019)

3.8 Summary

This chapter reviewed the concept of sustainability and settled on the Sustainability Development Analytical Grid as the selected lens for exploring and examining the graphic design practices. The dimensions of the Sustainability Development Analytical Grid were also expanded and some applicable to this research were selected to serve as the

foundational platform for similar research to be conducted since there was no established detailed sustainability framework adapted in the literature reviewed.

In reviewing likely ways used for the practice of sustainability in graphic design, almost all the approaches were environmentally oriented and close-ended. One approach that was not part of the approaches used for advancing sustainable graphic design was cosmopolitan localism. However, a review on cosmopolitan localism shows that it is an open-ended approach that permits a host of innovations locally aimed at a solution provided for the benefit of all. To validate this approach through data gathered, the three human-centred approaches (empathic, contextual and ethnography) were selected after a critical review on all the human-centred approaches as a methodological framework.

A conceptual framework was developed as the roadmap for the research study as depicted in Figure 3.9. The Sustainability Development Analytical Grid and the Activity Theory were merged for setting questions to explore and examine graphic design practices. The results unveiled the challenges and the likely solutions in the Ghanaian context leading to the re-conceptualisation of sustainable graphic design practices. The next chapter gives an exposition on the research philosophy and the expanded methodological framework bringing to the limelight how the various tools were used in the data-gathering processes.

CHAPTER FOUR

RESEARCH PHILOSOPHY AND RESEARCH METHODS

4.0 Introduction

This chapter uses Activity Theory as a tool for presenting and discussing the research philosophy and method used in this study. The philosophical underpinning of the research is situated in subjective ontology and interpretive epistemology. The chapter unveils the research methods which were employed in the data gathering and explains the thematic approach used for summarising and the use of Activity Theory for the analysis. The sources of data and the data gathering tools used and the participants who contributed to this research are all presented with the aid of Activity Theory. The essence of using Activity Theory for presenting the research paradigm and method was based on the idea that the research method consists of activities, which can be well captured through this lens. Thus, the usage of Activity Theory helped to elucidate the relationships among the various units harmoniously in the data gathering exercise. The details of Activity Theory and its various components have been discussed in Chapter 2.1.

The research method used for this study was exploratory. The research findings were assessed through the lens of sustainability to sift through the challenges regarding sustainability in graphic design practices at Asafo in Kumasi, Ghana. The emerging local sustainable graphic design practices were also sifted through as counteracting solutions to the challenges regarding sustainability in graphic design practices. The research methods addressed the research questions:

1. How are graphic design practices carried out in a developing African nation from a holistic sustainability perspective?
2. What are the locally emerging-design interventions developed to counter the challenges to sustainability in graphic design practices?
3. How can the emerging design interventions be used for re-conceptualisation of sustainable graphic design practices?

All the stated questions lead to solving the main question: How can design researchers and graphic designers initiate the shift towards holistic sustainability practices in a developing nation? Figure 4.0 is a snapshot of the research method used for exploring the graphic design practices, captured in Activity Theory form. This approach made the presentation on research philosophy and the research method clear and straight forward.

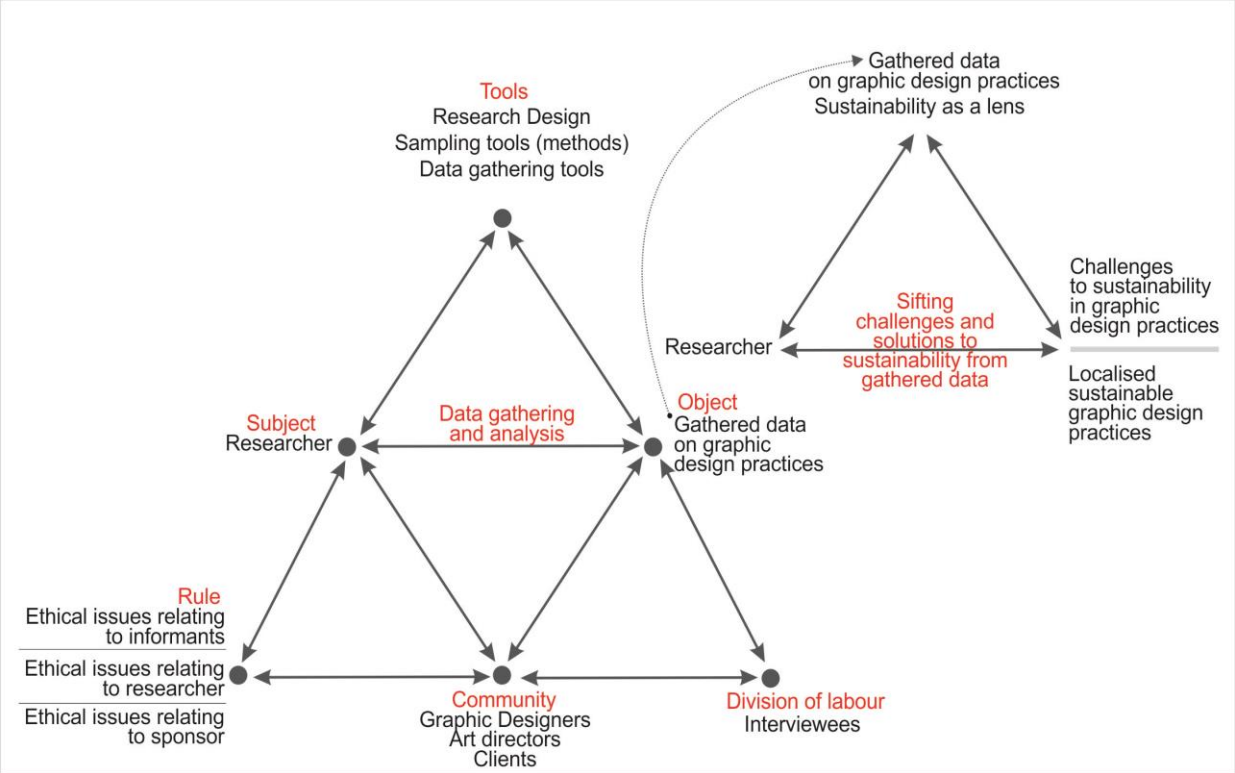

Figure 4.0: Research method and the associated activities (Author's construct, 2019)

4.1 Subject: research philosophy underpinning the entire study

In using Activity Theory as a framework in the first phase of the research method, the subject (researcher) as a key unit approached the research method with a set of beliefs and assumptions, which influenced how the entire research method was carried out as required in doctoral studies. The beliefs and assumptions are referred to as the researcher's research philosophy. In research philosophy, there are divergent opinions about this world and how it works in relation to reality, knowledge development and existence in the context of academia (Mason, 2014:49). Saunders et al. (2009:124), postulate that research philosophy is a system of beliefs and assumptions about the development of knowledge. Therefore, one's beliefs influence one's world view and govern how knowledge is gained which affects one's actions. From the perspective of academia, one's views about reality and how knowledge is gained have an immense effect on the way one conducts research. Therefore, a researcher's research design and findings are dependent on the researcher's perception of reality and how knowledge is gained. In conducting research, Mason (2014:51) and Saunders et al. (2009:127), claim that every piece of research can be viewed through three philosophical lenses, which should be the foundation block for every study. The three philosophical lenses are:

1. Ontology (Assumptions about the nature of reality)
2. Epistemology (Assumptions about knowledge, what constitutes acceptable and valid knowledge and how knowledge is communicated) / methodology (Method used for data gathering or conducting the research)
3. Axiology (Values and ethics that govern the research process)

This study adopted Mason's (2014:51) and Saunders' et al. (2009:127) three philosophical lenses about research. These philosophical underpinnings are also enshrined in research paradigms, thus every research paradigm has its ontology, epistemology/ methodology and axiology. The adoption of a research paradigm is mostly situationally dependent and thus a situation may call for one or two paradigms based on what a researcher is trying to discover, explain, develop or evaluate. From a philosophical perspective, the researcher adopted the interpretivist paradigm for the study. In casting more light on the interpretivist paradigm adopted for this research, there was a need to view it from ontological and epistemological perspectives to bring out its relevance.

The interpretivist ontology, which is termed as relativism posits that reality is socially constructed and therefore there are multiple realities constructed by social actors (Bagele & Kawulich, 2012:9; Scotland, 2012:11) In other words, reality is subjective and differs from person to person mediated by our senses through interaction with objects using language (Scotland, 2012:11). Socially constructed reality could be individually or group generated (Bagele & Kawulich, 2012:10). On epistemological grounds, interpretivists believe that knowledge is subjective since it is socially constructed and mentally oriented, thus truth is not objective but lies within human experiences (Bagele & Kawulich, 2012:10). From the perspective of subjectivism, valid knowledge is culturally and historically bound, and context-dependent (Bagele & Kawulich, 2012:10). In this regard, the interpretivist researcher assumes a subject-subjects position instead of subject-object position prevalent in natural sciences (Dieronitou, 2014:7).

From the ontological and epistemological positions in the context of interpretivism, the interpretivist researchers argue that human beings are different from physical objects, thus cannot be studied in a natural science approach (Saunders et al. 2008:140). Saunders et al. (2008:140) further posit that different meanings, times, cultural backgrounds and circumstances lead to the creation of unique experiences and different social realities when humans are considered as social actors. Thus events and circumstances are interpreted based on one's own set of meanings (Saunders, 2009:116). This implies that since society is seen as a fluid entity, the interactions and meanings generated will always be dynamically governed by time, culture and circumstances, which shapes how research is conducted.

Basing on the platform of interpretivism, the study centres on an ethnographic study of graphic designers with the view of exploring how they carry out their daily practices and the triggers behind these actions in order to trace their sustainability practices and challenges within the African nation's context. From the interpretivist perspective, since people are different and act based on their understanding derived from their experiences, cultural background and values, the practice of graphic design is likely to differ from graphic designer to graphic designer and design firm to design firm especially when experiences are factored in. The differences are likely to occur in the way the graphic designers carry out their design activities and related processes in the design value chain based on their backgrounds, experiences and values. Thus the central motive for adopting an interpretivist paradigm is not to observe only the practices of the graphic designers but to unearth the in-depth triggers of their practices from idea inception to the finished product through interview and observation. Leveraging the lens of interpretivism, an emancipatory stance by some graphic designers was explored to echo the concept of localism from mainstreaming ideologies which might not work for every situation hence the need to reshape or reform to suit the way of doing things especially in an African community (Bagele & Kawulich, 2012:11). Interpretivism also shows the essence of localising to challenge the status quo regarding practices (Rose & Glass, 2008:13).

4.2 Tools: mediating artefacts for gathering and analysing research data

Various tools were used in the data-gathering processes. From the Activity Theory point of view, the tools used for gathering the data in this research were selected, created and used based on the researcher's research philosophy. Exploratory and participatory research designs were adopted. The tools used for the exploratory research design were an ethnographic inquiry, interview protocol and dairies. In the case of the participatory design, a workshop was used as the major tool for the data gathering.

4.2.1 Research design

In order to know the road map for this research, a research map, which is also known as a research design was developed. The research design served as the connectivity plan which made the different aspects of this research fit well together; in an orderly and logical way. Before elaborating on the various aspects of the research design, it is worthwhile to ground the research design through definition. Research design is the conceptual framework or structure of research, which shows how all components of the research fit together logically to address the research problem (Creswell, 2014:29). The research design was based on exploratory research approaches based on the focus of this study, which was to explore the graphic design practices to unearth the challenges and the likely solutions from a

sustainability perspective. Thereafter, the discovered challenges to sustainability in graphic design practices were matched up with the likely solutions from the field.

The exploratory research approach was used because it is mostly a potent tool for seeking new insights especially for understanding a problem (Saunders, 2009:141). Thus it was ideal for the research based on the literature available on graphic design practices in a developing nation's context. Using an exploratory approach helped in this research for the discovery of the new trends of graphic design practices. For instance, it was discovered that some designers think like graphic designers but design like printers to overcome their press challenges. Other areas were the challenges to sustainability and the associated outcomes from a sustainability perspective, which were all discovered with the exploratory approach. Figure 4.1, is a snapshot of the research design which was used as a guide for the data gathering and data analysis. The next section discusses the method, sampling techniques and the data gathering tools used for the study as captured in Figure 4.0.

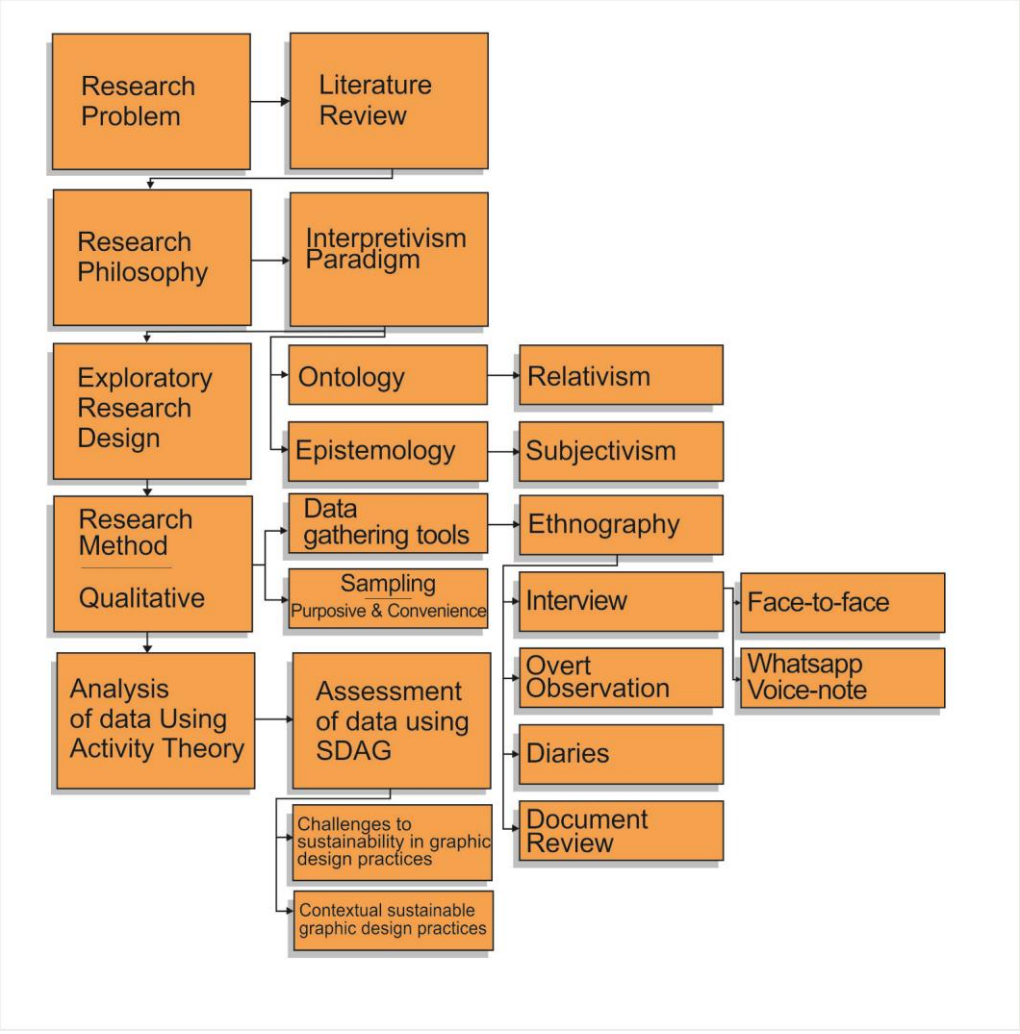

Figure 4.1: Research design (Author's construct, 2019)

4.2.2 Research method

A qualitative approach was used for this study. Qualitative research utilises an inductive approach that is purposefully centred on [in-depth] describing, explaining and interpreting of collected data (Williams, 2011:67). The qualitative approach was adopted because the aim of the research was to explore in-depth the graphic design practices in a developing nation through ethnography. The essence was to understand from an Activity Theory perspective, the graphic designers' motivations, how they select their materials and tools, and how they interact with the tools and materials. It was also to help in understanding the mediating rules they observe and their interaction with creative directors and their clients towards the designing of their graphic product.

The exploration dived deeper with the aid of graphic design processes as a guide, in order to clarify how messages are created and how production methods are planned. This was done to unveil the underlining social and economic issues in creating graphic design products as well as the environmental threats inherent in their production methods. In gathering the data, the study population and site were firstly selected after which the key informants were also selected. Figure 4.2 gives the workflow in the data gathering process through the use of the appropriate tools. The data gathering tools were selected and designed based on the interpretivist research paradigm.

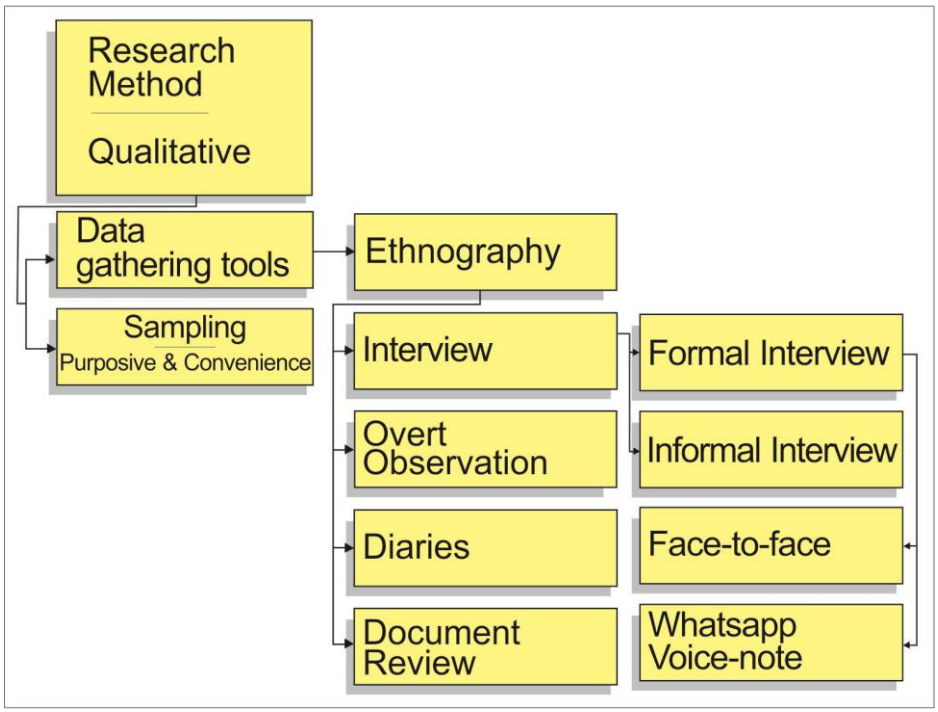

Figure 4.2: Research method and the data gathering tools used
(Author's construct, 2019)

4.2.2.1 The community: the study site and population for the research

The site and the population for this research are the community from the Activity Theory perspective. The research was conducted in Ghana and the exact site was Asafo, a suburb of Kumasi. Ghana was chosen because it is part of the fifty-one countries in Africa and part of the developing nations in Africa and thus share common characteristics economically with the other fifty nations (Africanvault, 2016). Ghana is situated in West Africa within a tropical climate. Currently, Ghana is made up of sixteen regions (Ghana Districts, 2019). Among these regions is the Ashanti region with Kumasi as its regional capital (Ghana Districts 2019). Asafo as a suburb of Kumasi was also selected because it has become the centre for graphic design and printing firms sharing common characteristics with some of the other towns in the sixteen regions in Ghana. It has approximately twenty-five (25) graphic design firms and above fifty (50) printing firms.

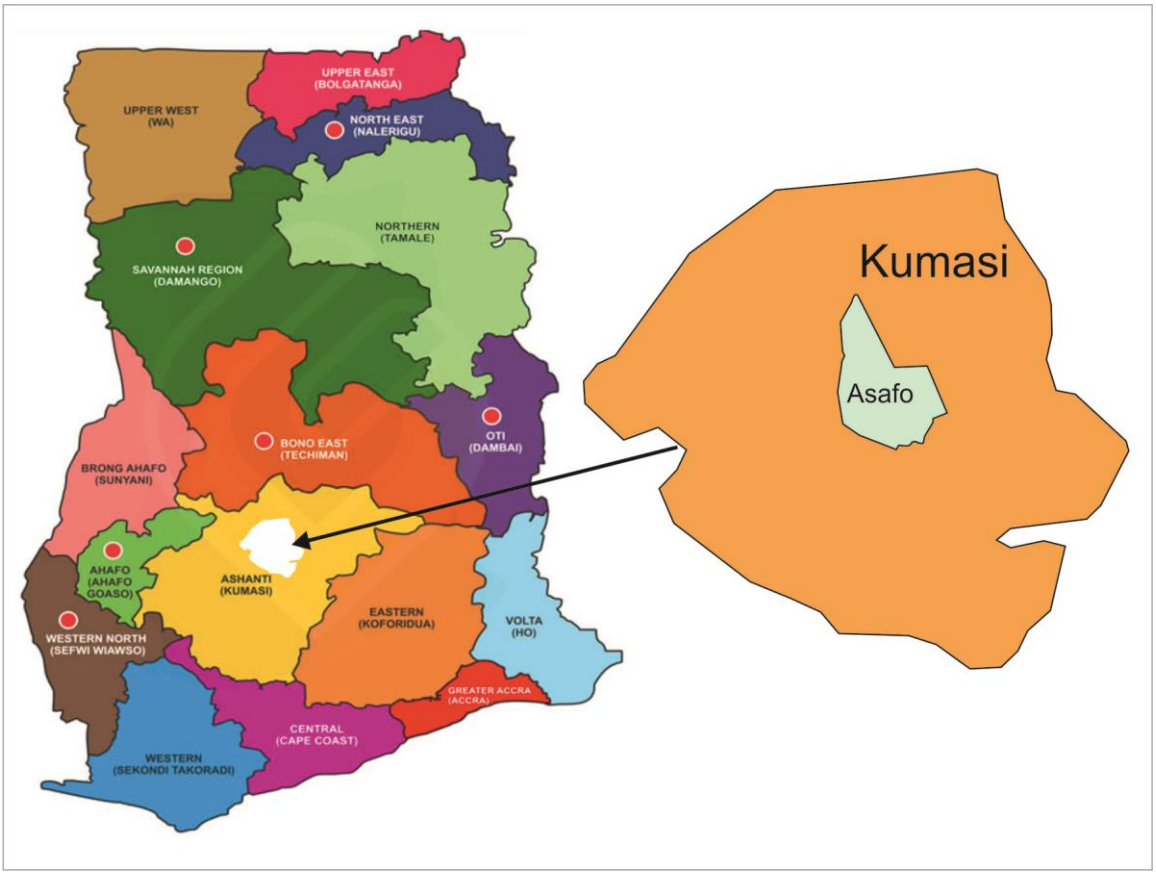

Figure 4.3 The map of Ghana, Kumasi and Asafo (Ghana Districts, 2019)

From Figure 4.3, Asafo may look small in terms of its geographical size but it is densely populated with graphic design firms and printing shops irrespective of the fact that it is a residential, turned industrial area. The population for the study consisted of graphic design practitioners, their clients and creative directors from design/print houses at Asafo in Kumasi and thus the sample was drawn from this population for the study. The clients were part of the population because the practice of sustainability without clients' consent will pose

difficulties in sustainability integration. In supporting the clients' inclusion, Chick and Micklethwaite (2011:3) advance that most clients succumb to professional advice when they have developed trust in designers who act and work professionally. Based on Chick and Micklethwaite's (2011:3) statement, it was therefore not out of order that clients were added in this study.

Table 4.0: Research site sampling and reasons (Author's construct, 2019)

Sample	Sample Size	Sampling Technique	Reason(s)
Ghana	1	Purposive	The research was conducted in Ghana because it shares common characteristics economically with the other 50 developing nations in Africa (Africanvault 2016) and thus the possibility of graphic designers engaging in similar practices may be high in Africa. Moreover, Ghana has a role to play in the Sustainable Development Goals being spearheaded by the United Nations.
Kumasi and Asafo	1	Convenient	Kumasi was selected based on easy accessibility. Asafo was also selected because it is a centre for graphic design and printing firms in Kumasi sharing common characteristics with the other towns in the other ten regions in Ghana.

4.2.2.2 Sample, sample size and sampling technique

The sample units selected for the study for the first phase of the data gathering were graphic designers, creative directors and the clients of the graphic designers. However, due to the need to gather more information which the key informants could not give because of lack of knowledge, informal discussions were conducted with jewellery makers who use by-products from the press and printing machine minders who either work with the graphic designers or outsource for them. Apart from the key Informants, graphic design firms were used as the basis for the selection of the graphic designers, their clients and the creative directors. For the interviewer's sake, no freelance graphic designer was included since most of the freelancers were always on the move and difficult to contact. The division of labour as seen in Table 4.1 are the practices on the field used as the yardstick for the selection of the interviewees. These responsibilities of the informants were later expanded in the findings as a result of new discoveries in the graphic design industrial space. The graphic design products were also content analysed based on the Sustainability Development Analytical Grid indicators.

Table 4.1: Selected samples for the research (Author's construct, 2019)

Selected samples for the research	The role played in the graphic design industry
Graphic designer	- Responsible for creating visual messages and provides advice on the types of materials to use. - Monitor the value chain from the production stage to finishing and at times oversee dispatch of finished products. - Responsible for job estimation.
Art director	- Confirms the visual designs. - Gives concepts and accepts materials or proposes alternative materials for clients.
Client	- Often co-designing with the graphic designers to obtain a design that suits their requests. - Provides specimen as a guide for the designer.
Graphic design products	- Graphically designed products give a fair idea of how sustainable a product could be.

In selecting the informants as sources for data gathering, it was done by using sampling techniques that best suited the data gathering from an interpretivist perspective. Sampling is related to the objective selection of specific sources of data through which information is derived to address set research objectives (Gentles et al. 2015). There are different ways in which the selection is done scientifically. In this research purposive, convenient and random sampling techniques were used for selecting the sample for the research based on the stated reasons (Creswell, 2009:175) as shown in Table 4.2.

Table 4.2: Samples, sampling technique and reasons (Author's construct, 2019)

Sample	Sample Size	Sampling Technique	Reason(s)
Graphic design firms	Fifteen/ Four	Purposive Convenient Random	Out of the twenty-five graphic design/press firms, fifteen were selected because they had professionally trained graphic designers. The selection was done through a pilot study of the profiles of the graphic designers. Four of these graphic design firms were selected through a simple random technique for the ethnographic study.
Graphic designers	Thirty	Purposive	The graphic designers were selected purposively using only those who availed themselves for the interview. A total of thirty graphic designers were selected for the interview and the largest number being six and a minimum of one per firm.
Creative directors	Fifteen	Purposive	All the firms visited had one creative director so each person was selected from the fifteen graphic design firms for this research.
Graphic design products	Thirty	Random	Two graphic design products were selected from each graphic design/press firms for the document review.
Clients	Thirty	Purpose	Two regular clients were selected from each of the fifteen graphic design firms selected.

4.2.2.3 Data collection methods and data gathering tools

Data was collected using the research questions as a guide through ethnographic enquiry by using unstructured or semi-structured interviews, observations, documents and visual materials review as well as diaries (Creswell, 2009:178) for the first phase of the research. As part of the data collection method, the research questions were expanded using Activity Theory and the Sustainable Development Analytical Grid as the benchmarks. The questions were first expanded by regarding graphic design practices as a set of activities requiring different actors and tools for the production of graphic design products through the lens of the Activity Theory Framework. The Sustainable Development Analytical Grid was also used to give the questions substances. Thus the expanded questions on the activities the graphic designers engaged in reflected the various facets of the Sustainable Development Analytical Grid as shown in Table 4.3. Also to make the data gathering easier, the right tool(s) were assigned to the questions and the Activity Theory unit under which the questions were developed.

Table 4.3: Sub research questions developed with corresponding data gathering tool (Author's construct, 2019)

Main Research Questions one	**What are the challenges to sustainability in the graphic design practices of a developing nation?**	
Activity theory Component	**Sub-questions**	**Data gathering instrument(s)**
Subject	Why do graphic designers engage in designing graphics products? (Motivations and interest)	Interview guide
Object	What is the nature of the communications content and the graphic design products produced by graphic designers?	Document review
Tools	What physical materials, object, knowledge and skills do the graphic designers depend on to achieve the purpose of their activities?	Interview guide
Rule	What norms and conventions do graphic designers adhere to in their graphic design activities?	Interview guide
Activity	How do the graphic designers and multiple actors engage in their activities to produce the graphic design products?	Participant observation
Community	Who are the multiple actors who share a common graphic design product?	Interview guide
Division of labour	What are the various tasks executed by the multiple actors in the community and which actor controls the tasks?	Interview guide
Outcome	What are the effects of the graphic design product produced on the environment, society and economy?	Interview guide, Observation
Development *(Analysis level in the Activity theory)*	What are the disruptions (tension) and innovations from historical and current graphic design practices in the light of sustainability?	Interview guide, Observation

Apart from the question under the development component of the Activity Theory, which addressed the main question, the rest of the questions were indirectly posed or posed in a way that did not presuppose that the graphic design practices were against sustainability. Rather they were put in a way that was open to all forms of data whether sustainable practices or not. The essence was to aid the researcher to approach the data gathering without any form of bias. Thus after the data was gathered all the findings were reported first after which the Sustainability Development Analytical Grid was used as a sieve to sift the challenges to sustainability in the graphic design practices bringing into the limelight how the challenges manifest as well as the associated outcomes. The next section covers the data gathering tools used for data mining and how they were used.

4.2.2.4 Ethnographic inquiry

The ethnographic inquiry is a data-gathering method that makes use of in-depth observations in a study to understand human behaviours and practices in their natural settings or environment (Blomberg, 2012:127). The purpose of using this approach was to gain a deeper understanding of graphic design practices, as well as the associated sustainability challenges graphic designers encounter in their daily practices in the Ghanaian context, and also to investigate how and why the challenges occur. An ethnographic approach for mining data is mostly preferred because it is able to give rich accounts of activities of people in their natural settings in order to establish a relationship between their values and their activities (Geneve, 2014:36). The tools used include participant observation, observational protocols, interview protocols, video recording, still camera, cellular phone as a recorder and probes (scrapbooks and dairies the graphic designers used to record their ideas and activities).

The ethnography inquiry of the graphic design practices at Asafo was done simultaneously with different tools. It started with the overt participant observation done in the prepress, press and post-press phases of design. The details on how the tools were used are discussed in the sub-topics under the data gathering tools. The ethnographic inquiry traced all the involvement or the interactions of the graphic designers in the design firms with other key stakeholders like the clients and the creative directors from pre-production to post-production. Figure 4.4 shows pictures of the entire graphic design process from prepress to post-press, although graphic designers are not involved directly in the press and post-press activities. What happens in these spaces are mostly influenced by the decisions of the graphic designers and creative directors, that is why sustainable graphic design includes them as under the oversight for the graphic designers. Thus all the observations focused on the prepress design decisions and how they impacted productions in the press and post-press spaces.

Figure 4.4 Graphic design practices production stages (Author's photograph, 2019)

4.2.2.5 Data collection tools

Creswell (2009:179) asserts that the data collection tools should be used based on the research philosophy and the associated ontological and epistemological dimensions. The tools, therefore, determine the nature and the quality of data one is likely to gather. Thus wrong tools may give wrong or inadequate data which may go a long way to affect the findings of a research. In this research, ethnographic inquiry tools were selected because the research philosophical underpinning was interpretivism, which advances a relativist ontology and subjectivist epistemology and thus the need to study the informants in-depth, was a necessity to unveil the nature of graphic design practices and the associated factors that drive their practices. The data gathering tools used were overt observational protocol,

interview protocol, diaries, smartphones and laptop. The subsequent sections give insight into how the selected tools were used for the data gathering.

4.2.2.6 Observation: a tool and a process for data gathering

Participant observation was used for gathering data on the processes and methodologies used by the graphic designers for producing services or products with the aim of documenting the nature of their practices and also to identify the sustainable issues with their practices. During the observation, these tools and processes were used: reflections and recall, pre-analysis (ideas and inferences), experiential data (expressions and personal feelings) and forward planning for revisiting the field for missing data on the graphic designer's practices (Gray, 2009:404). The observation consisted of three stages which were *off-site preparation*, *on-site or field observation and post-observation* as shown in Figure 4.5.

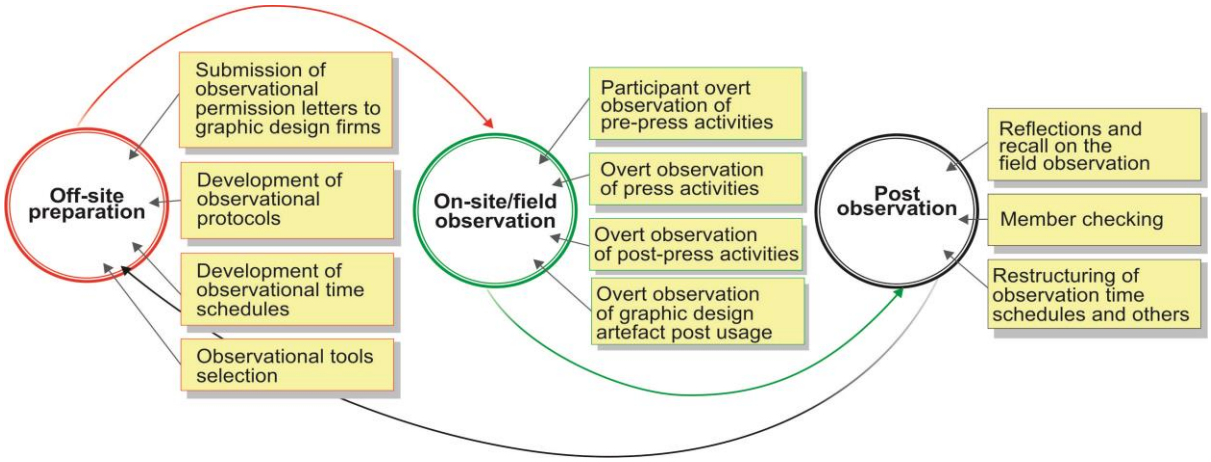

Figure 4.5: The observational journey trajectories (Author's construct, 2019)

Stage one: During the ***off-site preparation*** stage, the first task tackled was the submission of the observational permission letters to the selected graphic design/press houses for their consent. The consent was given but with conditions which were necessary to ensure that my presence did not interfere with their normal production processes from the prepress to the post-press. The first condition was not to ask the graphic designers and the other associate teams questions when they were engaged in their duties. The only time I could ask questions was when they were free and on break. I was however permitted to use my personal laptop computer to design graphic products in their studios for them. I accepted the conditions and moved on to the next preparation stage. In other to avoid ad-hoc observational data gathering, an observational protocol was developed, which was centred on the key areas of graphic design production processes. Table 4.4 shows the graphic design production stages and the associated observational tools.

Table 4.4 Graphic design production stages and the associated observational tools (Author's construct, 2019)

The graphic design production stage	Observational Protocol (Activities to observe)	Observational tools	Reason
Pre-press	• Clients interaction with graphic designers during design briefing and during designing • Designing graphics product. • Factors considered during designing • Separation of colours • Disposal of waste chemicals • Platemaking • Film disposals	• Overt participant observation • Still Camera • Google photos • Diaries	To experience and record graphic design practices in the prepress with focus on factors that influence their design decisions and its relationship with sustainability.
Press	• Paper types used • Inks types and usage • Ink disposal • Printing machine minders skills • Printing plate disposals • Printing machine roller wash chemicals and disposals	• Overt observation • Still Camera • Google photos • Diaries	To record how the design decisions of the graphic designers influence the use of inks, deficiency in printing and their influence on sustainability
Post-press	• Binding • Paper cutting and trimming • Paper lamination or UV coatings	• Overt observation • Still Camera • Google photos • Diaries	To record off-cards (trimmed paper) management, waste inks and chemical management
Off-press	• Graphic design products post usage	• Overt observation • Still Camera • Google photos	To record graphic designers decision effect of the choice of paper or material on the environment.

After the observational protocol and the associated reasons and tools were developed, an observational time schedule was also created. The essence of the observational time schedules as shown in Table 4.5 was to help the executive directors of the graphic design firms to know my schedules and inform the staff accordingly to prepare to receive me in their respective sections.

Table: 4.5 Observational time schedules (Author's construct, 2019)

Day	Time	Period
Monday	7:00 am – 6:00pm	2 months
Wednesday	7:00 am – 6:00pm	
Saturday	9:00 am – 2:00 pm	

Three days were planned for the observation because the rest of the days were reserved for conducting the interview in different graphic design/press firms for data gathering and transcribing the recorded interview audios. After all these preparations, I went straight to the field to start the observation.

Stage two: After the **off-site** preparation, the next stage was the **field observation.** The field observation started from the pre-press to the post-press as planned in Table 4.4. Two types of observations were utilised during this stage. The first one was the overt participant observation. In other to use overt observation, the designers were informed of the intent, which they consented and opened their doors to allow me to work with them. I actually created a couple of graphic design works for the company through the overt participant observation especially with the projects my expertise was needed. During the observation, my cellular phone was used as a camera for photographing the various activities I observed. For prevention of losing the photographed images (files), I connected my cellular phone to my Google Photos account for the photographs to automatically synchronise any time a shot was taken and stored in my Google Photos account as shown in Figure 4.6 and 4.7.

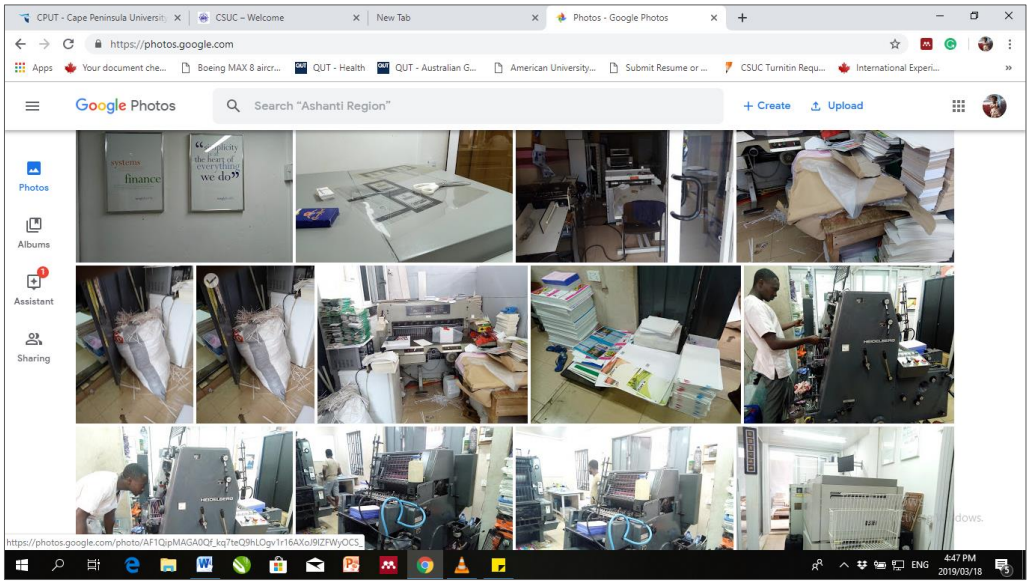

Figure 4.6: Synchronised photographs in Google Photos from cellular phone album (Author's photograph, 2019)

All the saved photographs in my Google Photos account were labelled according to the date and day they were taken and the section where it was taken. The other tool used for recording the activities under observation was Google docs as a diary on my cellular phone. In taking information in the diary, these were the information-seeking guides used:

i. The date and day of the observation
ii. The section under observation
iii. The name of the staff rendering the graphic design activity
iv. The details of the activity being rendered
v. How the activity is being rendered
vi. Arising questions needing a response for clarity on the activity

In a typical day, three different design projects were observed and followed from the pre-press to the post-press in each of the four firms sampled for the study. There were some days, the design projects were observed in the first two sections due to the volume of the work to be done on it. In such circumstances, the projects were followed the next day. All questions on the various activities carried out by the graphic designers and others were asked during the break or after work to ensure that all the needed information was captured for the day. Though the initial observational plan was to use two months, however, it was realised that within a month I started to experience data saturation in each firm observed. Collected data is said to have reached saturation when no new elements or data are found making seeking for additional information unnecessary since the additional data will be just a repetition of existing data (Nascimento et al. 2018:229).

Data saturation serves as a means of internal validity of data. Though in planning, two months were allocated for the observation, however, data saturation was utilised as a measure for determining whether gathered data was enough or not. Thus data saturation helped in knowing the right sample size and months needed for the data gathering as it has been observed that most researchers struggle to determine or use the right research sample size from the onset of their studies (Nascimento et al. 2018:229). In all, six months were used for the observation for the four graphic design firms/press houses, with each taking one and a half months. The saturation occurred in the types of project, the activities the graphic designers engaged in and how the activities were carried out. The reason for the saturation was apparently due to the same project line execution carried out by the firms. The projects that were mostly done consisted of textbooks, flyers, banners, labels, paper packages, funeral brochures, magazines, table-top calendars, posters and billboard designs. After the field observation, reflections and recall amid member checking were used to interrogate the gathered data for authenticity and validity as captured in stage three.

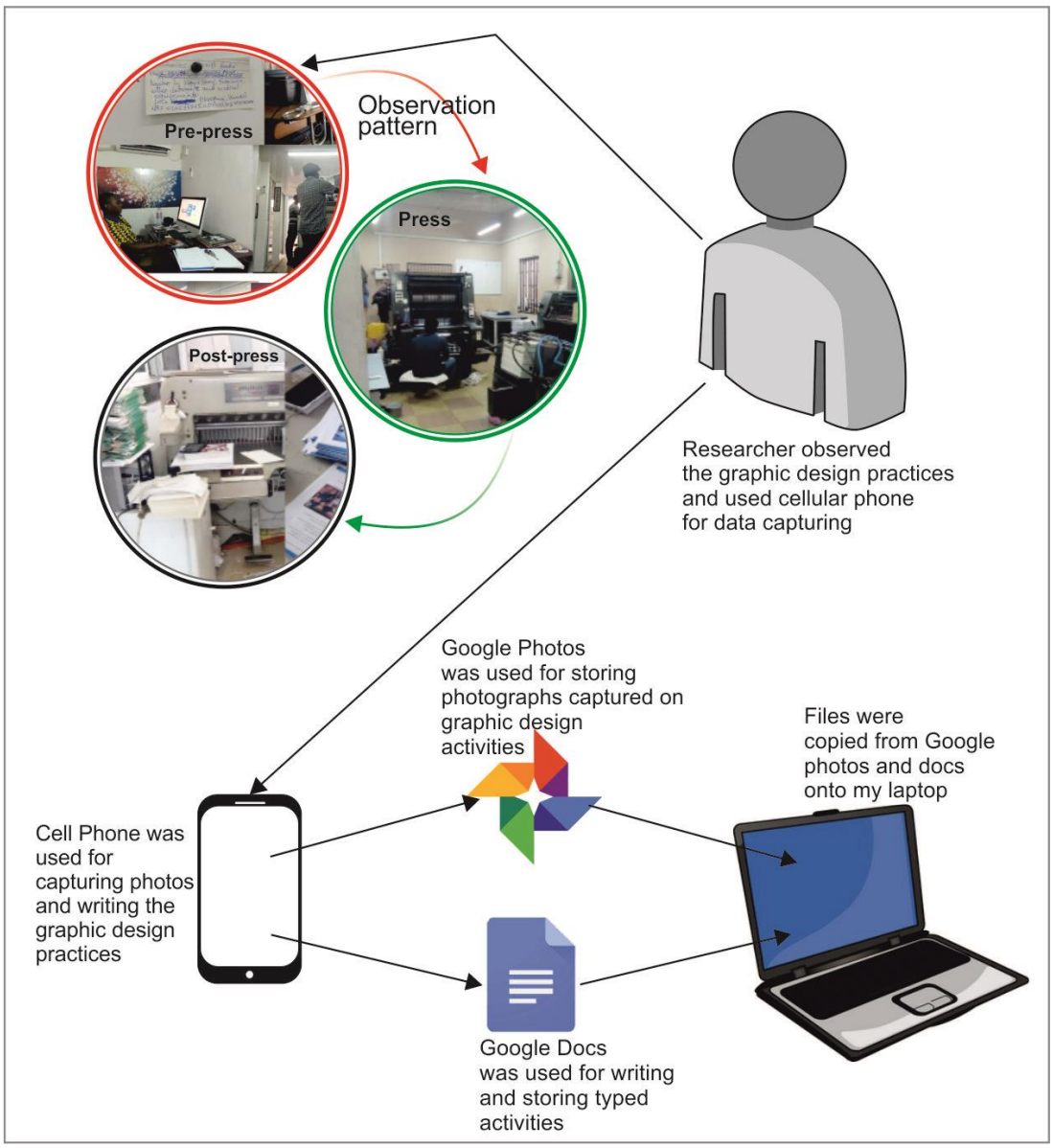

Figure 4.7: Observational pattern and digital tools used for data capturing (Author's construct, 2019)

Stage three: The last stage which is seen as the aftermath of the field observation was to ensure the validity and authenticity of the recorded data by employing reflections, recall and member checking. The **reflection and recall** under this stage were done to check bias in the recorded data. In doing this, I first tried to read through the script to match it up with the pictures in the Google Photos account while trying to recall what transpired to check for any unnecessary additions or eliminated information. The reflection was done after every day's observations to help improve my observational skills and also to avoid inaccurate data and data loss. Reflections and recall were necessary since the validity and authenticity of research grounded in interpretivist epistemology presupposes the possibility of the researcher to interpret and record information that favoured him. To help improve/secure the validity and authenticity of the data gathered through the observations, a member checking

method was adopted. Member checking is [when] the [researcher] return gathered data through an interview, observation or data group discussion to participants or informants for validating the data (Birt et al. 2016:1803). Though member checking comes with challenges such as interpretations when viewed by informants, which may lead to amendment of the data during the validation by the informants or the informants might change some information to favour him or her (Birt et al. 2016). After submitting the script for member checking, the outcome was not entangled in any of the likely suggestions the literature captured, instead, it was a procedural change relating to the activities that were corrected by the informants. On the whole, the observation was successful except for a few challenges.

The challenges encountered during the observation were related to workers infringing on the regulation I was supposed to follow. Although I observed the regulations given, the workers infringed on it by talking to me instead of focusing on their work. This resulted in errors in their activities such as typographical and poor plate-making errors which cost the companies. Others were related to hostile attitudes by some of the workers due to my presence which made them uncomfortable in rendering their activities even though the managers of the graphic design/press house had given me the permission to undertake my research, which the staff consented too as well. Others too felt I was trespassing on their space and cautioned that the data I have gathered so far was enough and that I should not ask them further questions, which I gladly did since as part of the research ethics they could withdraw from the study at any point in time. Though these challenges cropped up, they did not affect the quality of the data gathered because at the time I finished with the last observation in the last firm I could trace recurring data from the first firm to the very last one. The challenges and comprehension of the graphic design practices led to the modification of the off-site preparation for observation, which inadvertently reduced the challenged. All the findings are captured in Chapter Six. The next session is a methodological reflection on the use of observation as a data-gathering tool.

4.2.2.7 Methodological reflection on the use of observation as a data-gathering tool

From a methodological stance, observation was used as the means of gathering the data while the observational protocol was the tool for the data gathering. It worked along with diaries, informal interviews and photographs in this research. In the aspect of taking photographs, the use of the cellular phone as digital still camera played a fascinating role from digital data gathering perspective as seen in Matturi's (2016) research which gave an exposition on the use of digital data gathering for facilitating the data processing and analysis. This connotes that digital data gathering needs to be fore-fronted or mainstreamed

for efficiency and validity since it gives live access for others to validate the data while data collection is on-going when research is done in a team or monitored by external institutions.

The observational protocol was so relevant because it served as the map for the observation to aid the researcher to avoid unnecessary detours however, some detours were embarked on as far as they led to further unveiling trajectories of the graphic design practices without diverting from the aim of the research, the associated theory and the research objectives on which the observational guide was built. The informal interviews were done along with observation were also crucial from an interpretivist epistemological perspective because it helped me to avoid epistemic fallacy. Thus, every graphic design activity was explained and interpreted through the eyes of the informants and not the researcher by asking further questions for clarity. Epistemic fallacy simply refers to a disjuncture between reality and perception of objectivity and subjectivity (France & Haddon, 2014) contextually caused by how one perceives the world based on one's personal experiences, values and beliefs contrary to what the majority of people agree on.

Bouwel (2003:82) also advances that epistemic fallacy occurs when ontology cannot be substantiated by an epistemology within the research. Due to this envisaged challenge, I recorded only what I observed without adding or subtracting based on my knowledge as a graphic designer and a researcher eliminating my personal experience, values and beliefs from interfering with the data-gathering processes. Thus in using observation as a means and a tool, avoiding epistemic fallacy is a self-mechanism for ensuring the credibility and authenticity of the gathered data. The next tool for the data gathering used was an interview guide, thus the next sub-topic elaborates on how the tool was used and its associated challenges.

4.2.2.8 Interview: a process and a tool for understanding and gathering information on the dynamism of graphic design practitioners' practices and experiences

Interview from a qualitative perspective is a platform for interaction between two people (Interviewer and interviewee), where the interviewer asks a set of questions intentionally created (formal) or ad hoc – unstructured (informal), and feedback given by the interviewee based on the interviewee's understanding contextually. In this research, interview as data gathering process and interview guide as a tool were used in addition to the observation for covering areas of the graphic design practices which could not be observed such as motivations of the designers, factors that influence their design decisions and many more. It also helped to unveil the graphic designers' creative director and clients' experiences. In all,

a total of seventy-five (75) informants were interviewed. Thirty (30) were graphic designers, thirty (30) were clients and fifteen (15) were creative directors. The interview questions covered these areas:

1. Motivations and interest of the graphic designers, creative directors and their clients.
2. Graphic designers' means of selection and usage of materials as well as the management of the waste from the used materials.
3. Norms and conventions used by the graphic designers and the creative directors in their practices.
4. The role the graphic designers and multiple actors play in the creation of graphic design products.
5. The experiences of the multiple actors and their interplay with graphic design product production.
6. The effect of graphic design product production practices on the environment, society and the economy.
7. Current disruptions and innovations in the graphic design industry.

The three stages; pre-interview (preparation), field interview and post-interview were embarked on for the successful use of interview as a process and a data-gathering tool. Figure 4.8 gives an overview of the activities that transpired in each stage, which will be elaborated in the subsequent paragraphs. The modes of an interview conducted were face-to-face on-site (in the design studio/printing house), face-to-face off-site (outside the design studio/printing house) and WhatsApp voice-note interview. There were a lot of differences concerning the feedback in these three modes of conducting an interview. The details on the differences will be reported in the reflections on the use of interview in the light of the three modes of the interview used.

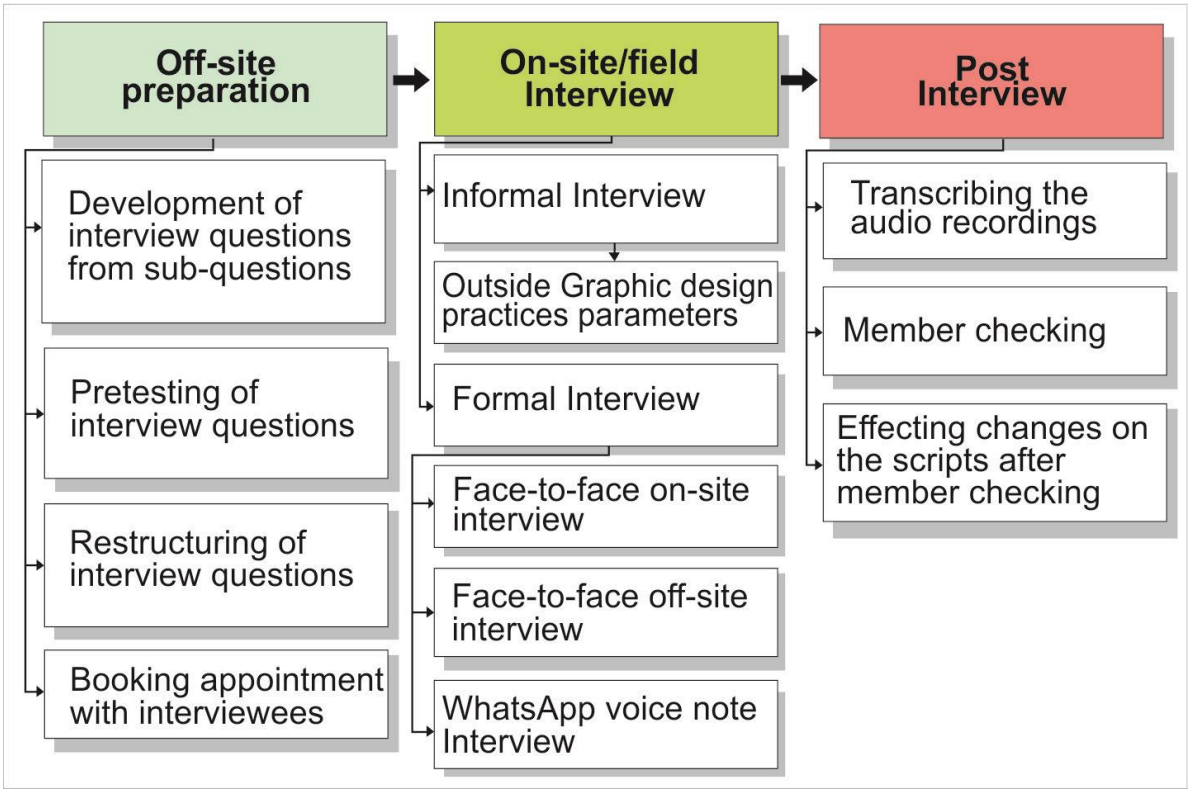

Figure 4.8: The interview trajectories (Author's construct, 2019)

The **off-site preparation** towards the interview started with the development of the interview guides or questions, which were derived from the sub-questions in Table 4.3a and b. Though the main research from which the sub-questions were developed seeks to unearth the challenges to sustainability, which the questions do not request directly, instead, they sought to gather every detail on the graphic design practices. The resultant findings were then assessed through the lens of Sustainability Analytical Grid to uncover the challenges which will be tackled in Chapter five of this thesis. After the development of the interview guides, the interview guides were pre-tested on some graphic designers who volunteered to be used and responded to the interview questions. This was so useful because it was realised that some of the structure of the sentence was difficult for them to understand, while on the other hand there were some omissions. I used the pre-test opportunity to make all the necessary corrections to put the interview guides in shape for the field interview. In all three formal interview guides were developed for the selected graphic designers, creative directors and their clients. In the case of informal, the interview was unstructured.

The various selected graphic design/print houses for the research were visited and I booked an appointment with the informants to conduct the interview. From the informants' response on the booking appointments, I realised that some would be available for the interview in their offices, with others had to meet me somewhere while others were too busy but were willing to be interviewed. I, therefore, devised a strategy of conduct for the interview. The first

strategy was *"face-to-face on-site interview", "face-to-face off-site interview"*, and *"WhatsApp voice-note interview"* to meet my interview needs. The *"face-to-face on-site interview",* was for the informants who were available to be interviewed in their offices, "*face-to-face off-site interview"*, was for informants who I could meet after work outside their offices while the *"WhatsApp voice-note interview"* was for informants who were too busy but were ready to use WhatsApp to respond to the interview questions. The WhatsApp voice-note interview was helpful for most of the clients since they were quite busy people.

During the booking of an appointment for the interview with the informants, the informants were first introduced to the preambles of the interview by briefing them of the content of the interview and were provided with a copy of the informant consent form to read as well. The rudiment for the participation was spelt out to the informants who agreed to participate in the interview; they were informed of their right to withdraw from the interview at any point in time if they so wish as seen in Appendix B. The informants were also assured of the confidentiality attached to their names and identity when the report or any portion of the report is published. The forms were signed by the informants for their legal consent giving me the right to commence the interview per the agreed times with the informants.

One the field formal interview was conducted in three ways as shown in Figure 4.7. All three ways of the interviews were used at any point in time depending on the mode that suited an informant. The three groups of informants (graphic designers, creative art directors and clients) were also interviewed depending on availability but not group by group. During the face-to-face interviews, a cellular phone with voice recorder functionality was used for recording the interactions. During the interview, an interview information sheet with the details: interviewee's serial code, the name of the interviewee, cellular phone contact, recorded audio code and graphic design firm's name was used to store information on every interview conducted. For instance, the audio identification code for graphic designers was GD, the code for the creative directors was CD and that of the clients was CL. The essence for collecting these details for every interview was to make referring to the recorded audio file easy as well as for member checking after the transcription. The interview information sheet served also as a tool for taking notes on keywords used by the interviewees during the interview. Each interview lasted for an average of twenty-five minutes. Each interview question was also explained very well with practical examples to help to understand and enhance the feedback from the interviewee. During the interview, I adopted reiteration of feedback as a validity strategy for the interviewee to check if whatever I heard was what he or she meant especially with feedbacks which were not clear to me.

In the case of the WhatsApp voice-note usage, the interview questions were recorded in the form of voice notes on WhatsApp, each question for each voice note. Thus the whole questions were not captured in one voice-note to make responding to the questions easier and effective. The interview questions were explained for clarity to facilitate right response however, an additional directive was given, for informants who replied via voice-note to ask for clarity if the need arose on the interview questions during the use of the voice-note for feedback. The entire modes used for formal interviews were effective. In the case of the informal interviews, the informants were blacksmiths, printing machine minders as well as the binding officers. The blacksmiths were interviewed because they utilised the waste chemicals from image setters used for making films for processing their jewels. In the case of the blacksmith workers, their interview since was informal was on what they use the waste developers (chemical developing films) for and how they use it. In the case of the printing machine minders, their interview was on their experience with the influence of the design of the graphic designers on their printing.

The next was the **post-interview** stage. All the recordings were first transferred into a computer then labelled using the interview informational sheet or form as a guide to avoiding incorrect audio files labels. The files were categorised and put into three different folders labelled GD, CD and CL. The recorded audio interviews were then listened to at least three times before being transcribed verbatim for the sake of authenticity and validity. Transcribing is the means of producing recorded audio in a written text form (Halcomb & Davidson, 2006). However, other researchers like Azevedo et al. (2017:163) advance two approaches, which are naturalised and denaturalised transcriptions. Azevedo et al. (2017:163) further advance that to make the spoken or verbal information readable it may call for denaturalised transcription, which requires reduction, interpretation and representation, instead of just listening and writing. Though, the assertion by Azevedo et al. (2017:163) sounds logical it might take out the necessary information that could make the verbal information incomplete and distort the meaning of the interview contextually, which might jeopardise the validity of the data. I, therefore, chose the naturalised transcription in order to ensure validity, authenticity and contextual understanding of the transcribed data. The transcriptions were done on the individual interview informational sheet bearing the right interviewee's details. The transcribed interview was sent back to every interviewee for member checking for corrections and additions where applicable. The corrections were done by the interviewees. All the corrections from the interviewees were made after which they were transferred or copied into Microsoft Office Excel and arranged in a tabular form for coding and categorisation.

The interview was a success despite a few challenges relating to reaching busy people who were not on WhatsApp. Most interviewees were delighted to engage and be part of the research. Their reception for the interview was very encouraging. The informants who used a voice-note interview also were happy to use WhatsApp as a data-gathering tool in the comfort of their homes. Others too had so much information though unrelated but I tried to put them on track based on the focus of the interview. Audio interview recordings mostly reflect the interviewees' emotions, opinions, life history and more other personal aspects which are sensitive information (Azevedo et al. 2017:165). Therefore, in protecting the identity of my interviewees, the audio interviews as well as the transcribed interviews sheets will all be kept and password on my laptop computer for future use when the thesis is examined and corrections have been effected for final submission.

4.2.2.9 Object: document and graphic design products review

The essence of the document review was for triangulating for validity and gathering of extra data that the observation and interview used could not capture due to their laminations. The document review covered graphic design products, which is seen as the *object* from an Activity Theory perspective. The other documents were Ghana Food and Drug Authority guidelines and importation policy for paper importers which also fall under the *rules* in Activity Theory. The details of graphic design products reviewed are captured in table 4.6

Table 4.6: Documents reviewed and justification (Author's construct, 2019)

General Document	Specific Document	Quantity	Justification
Graphic design products	Flyers	5	One of the categories for economic sustainability in graphic design practices is the quality of the product from SDAG. Hence the need for assessment for quality in the light of communication from a sustainability perspective.
	Posters	5	
	Brochures	5	
	Books	5	
	Packages	5	
	labels	5	
Ghana Food and Drug Authority guidelines	Advertising, labels and packaging design	1	The Ghana Food and Drug Authority guidelines serve as rules that govern how graphic designers design packages and labels.
Ghana Environmental Protection Agency	Environmental regulation for production and disposal of waste	1	Guides graphic design practices against unlawful waste disposal and outlines appropriate disposal methods.

Before the review, a document review protocol was developed from the Sustainability Development Analytical Grid. It was driven by:

1. The graphic design product and its influence on communication from a social sustainability perspective.
2. The graphic design product and its influence on economic viability.
3. The graphic design product and its influence on environmental sustainability.

The details of the document review protocol are captured in Appendix F. To undertake the document review or the graphic design product review three graphic designers were selected in addition to the researcher based on their knowledge about graphic design and production purposively. The four participants were to undertake the graphic design products review to avoid bias, which is likely to happen should one person undertake it.

During the document review, the three graphic designers and I sat together, the graphic design products to be reviewed were shown one after the other. Each participant was given the review protocol to undertake the review alone. Following the individual review, the products were shown again. This time, each participant was allowed to verbally say his/her reviewed information about the individual graphic design product. After that, we collectively discussed each participant's review until a consensus was reached on each product based on the review protocol. This implies that the final consensus became the documented review for each product as depicted in Figure 4.9. The documents (Ghana Food and Drug Authority guidelines and Ghana Environmental Protection Agency policies were also analysed using the same procedure used for the product. After this exercise, the resultant data were all input into Microsoft Office Excel to be coded.

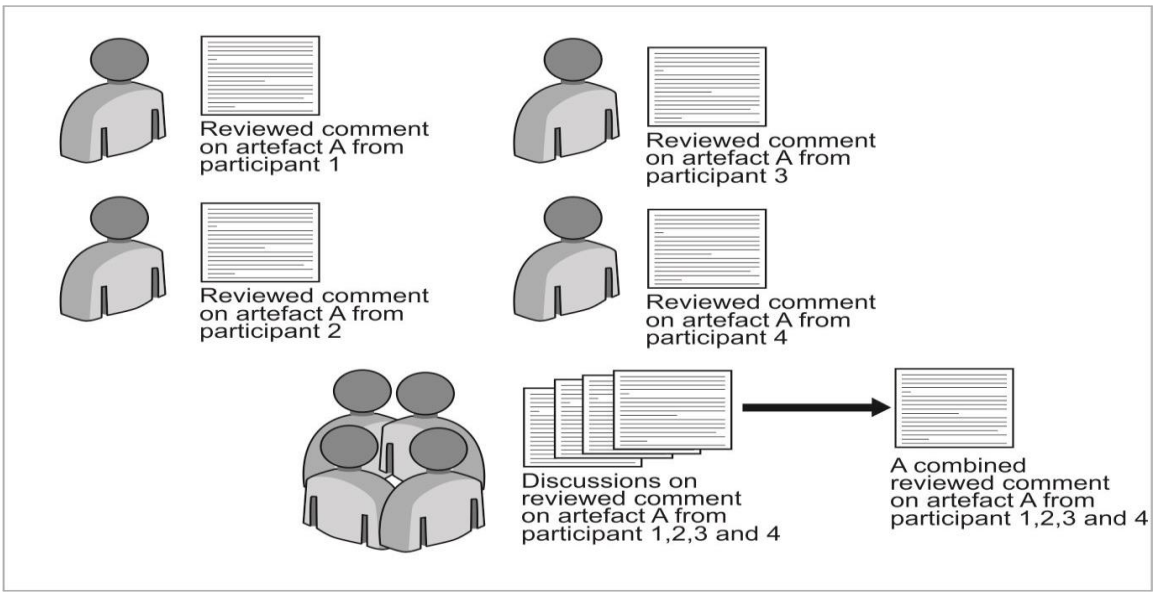

Figure 4.9: Document /graphic design product review process (Author's construct, 2019)

4.2.3 Coding and categorisation of the data

The coding and categorisation of data were done manually on a spreadsheet in Microsoft Office Excel. Coding of data is an art and craft (Saldana, 2013:40) and requires creativity, thus codes are often short phrases that symbolically represent a portion of a data be it textual or visual (Saldana, 2013:3) that are either developed from the data or created. Concept-driven coding was used for the transcribed interview, observational data and the document reviews. It was adopted because the interview questions were derived from Activity Theory units and the Sustainability Development Analytical Grid. Since the questions were derived from existing categories, it was ideal to start the coding using these categories as guides while looking out for keywords that expatiated on the categories for easy mapping of patterns or sequence, causations, correspondence and differences. Additional categories also emerged from the coded data which were not in the Sustainability Analytical Grid which were captured under the categories. Figure 4.10 throws more light on the entire coding experience.

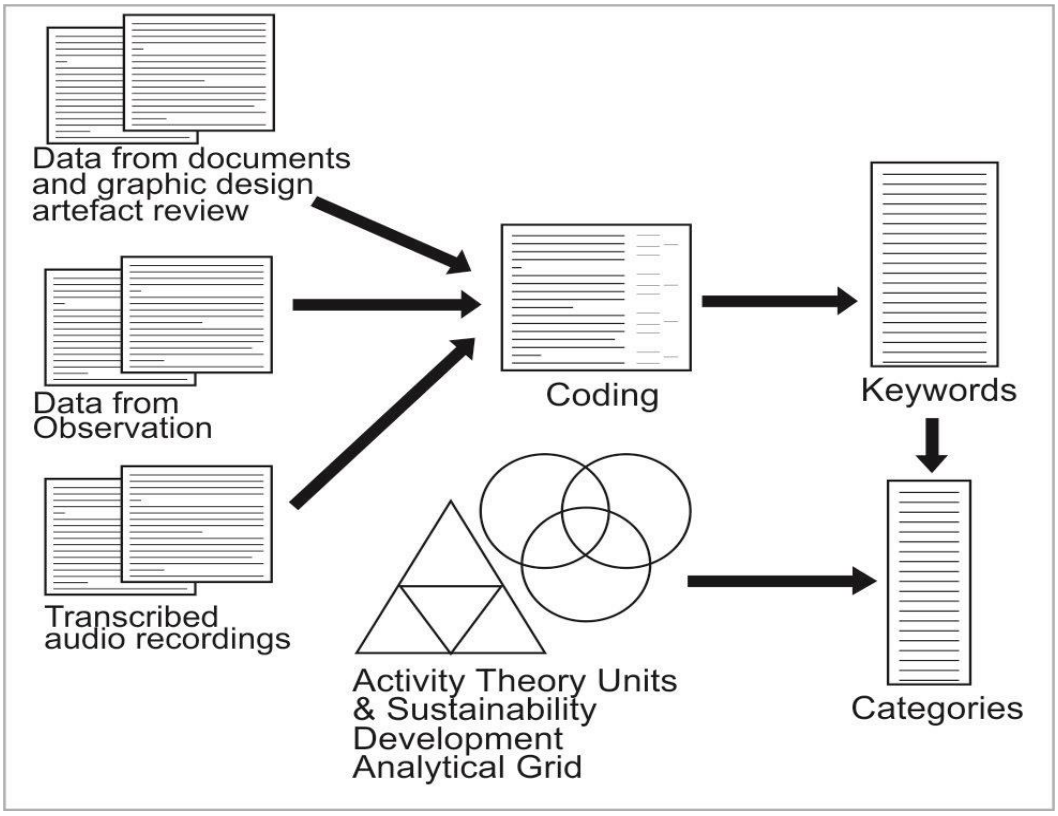

Figure 4.10: The coding process (Author's construct, 2019)

The coding was done in three phases namely, pre-coding, coding and post-coding. The pre-coding started with the inputting of the interview transcriptions into Microsoft Office Excel. An additional column for the Keywords was created with the keywords close to the interview quote. A column was also added for the categories which were from the Activity Theory, the Sustainability Development Analytical Grid or the interview questions. The keywords column

was linked to the categories column on the spreadsheet in Microsoft Office Excel to serve as a guide for the data analysis.

The coding was done in two cycles. The first cycle was coding the data into keywords and not short-codes. I coded straight into keyword because my focus was not quantity but to look for patterns and similarities, causations among others. The categories we derived from the Activity Theory and the Sustainability Analytical Grid which linked to the questions. Thus the questions were obtained from the categories; however other categories were developed in the course of the coding in the second cycle phase. After the coding, during the post-coding phase, I went through the entire code to check if the coding was done well by cross-checking the keywords against the raw data for keywords true reflection of the raw data. Appendix G shows the coded data with keyword and categories. The next stage was the analysis.

4.2.4 Data analysis

Data analysis is a step-by-step approach used for mining meaning from gathered data through organizing and interrogating data in ways that unveil patterns, themes, relationships, explanations, interpretations, critiques, or may even generate theories (Leech & Onwuegbuzie, 2007:564). The unit of analysis was two-fold: graphic design activities and document/graphic design products. The data analysis in this research encompassed the gathered data from the observation and interview on graphic design practices and the document/ product review. The analyses were done on two levels. The first was thematic analysis and the second was Activity Theory analysis. During the thematic analysis, the raw data was coded, reduced into keywords, which were also combined into categories for easy discussions and interpretations in Chapter 6 under discussion of findings.

The second phase used Activity Theory as the tool for the analysis. This theory was used to interrogate the interaction among the various units therein, through the lens of the Sustainability Development Analytical Grid to unveil the tensions and developments that serve as challenges to sustainability in graphic design practices. The analysis was done by first categorising all the gathered data into the various units of the Activity Theory, which was done through the aid of Table 4.3. Thus the typical activities of the graphic designers which cumulate into their practices were analysed by interrogating how tools are used, rules are obeyed or modified and the interaction that goes on with the clients and art director in the designing of a graphic material/products in relation to sustainability. The resultant tensions and developments were used as guidelines for the development of sustainable graphic design practices through the use of human-centred design interventions in Chapter five.

4.3 Presentation of findings

The findings were presented by means of verbatim quotes, categories, diagrams and pictures for a better understanding of the data to establish coherence and authenticity of the information.

4.4 Rule: authenticity, credibility, validity and reliability

Validity is one of the strengths of qualitative research which thrives on trustworthiness, authenticity and credibility of the research findings from the perspective of the researcher, the participant or the readers (Creswell & Miller, 2000 as cited in Creswell, 2009:191). In ensuring the validity of this research reliability strategies were utilised. In ensuring reliability, method triangulation was used to examine or check data gathered on graphic design practices for coherent justification of the information mined (Creswell, 2009:191). The triangulation method used consisted of observation, interview and document/graphic design product review. Member checking was also used by showing participants re-coded data validity and authenticity (Creswell, 2009:191). Reflectivity was adopted in the reporting of the findings to remove (as far as possible) bias in the research. Details of the methods for checking validity, authenticity and credibility of data were discussed under the three data gathering methods used.

4.5 Rule: ethical considerations

In every research, there is the need to anticipate the ethical issues that may arise during the study (Hesse-Bieber & Leavey, 2006 as cited in Creswell, 2014:87). There was, therefore, the need to protect the research participants in this study: develop a trust with them; promote the integrity of the research; guard against misconduct and impropriety that might reflect on the various data gathering stages in the research (Israel & Hay, 2006 as cited in Creswell, 2014:87). In this research, every necessary ethical standard was observed.

4.5.1 Ethical issues relating to informants/respondents

The design firms' stakeholders (informants) in this study were graphic designers, their clients and creative directors. They were therefore approached using the following guiding principles for ethical considerations:

a. The informants were not forced into participating in the study rather an informed consent letter was given to all likely participants. All the likely participants were informed about the intended purpose of the study and what their contribution was in the study in the two phases of data gathering methods. All participants were not coaxed into the research with incentives to participate in the study. Instead, the importance of the study was emphasised to encourage voluntary participation in

the research. All the participants were informed that anyone who decided to pull out from the study and cancel the information delivered to the investigator was allowed at any point in time to do so. All information collected from participants was treated confidentially to avoid the invasion of privacy and psychological harm.

b. All participants who voluntarily wanted and participated in the research were requested to sign a statement of participation.
c. Though participants added their names for easy member checking, the names of the participants were not captured in the research.
d. Names of design firms were not captured as part of the results as this could harm their status in the selected design community.

4.5.2 Ethical issues relating to the researcher

The researcher adhered to the ethics and principles of the Faculty of Informatics and Design of the Cape Peninsula University of Technology as well as the fundamental principles of social science research. To achieve this, the researcher took into account the following:

a. Manipulations of data collection procedures, data analysis and interpretations in favour of the researcher's personal interest were totally avoided.
b. Data collection procedure and interpretation were void of biases by using the credibility, validity and authenticity checking-instruments in conducting the study.
c. The results of the report were communicated correctly without any bias by using verbatim quotes and unedited pictures
d. The researcher upheld a conventional and expected code of ethics, principles incorporating among others, the guidelines of beneficence, respect for human dignity and justice in this research.

4.6 Summary

This chapter employed Activity Theory as the presentational tool for discussing the research method used in this study. The research method was based on the research philosophy, which was grounded in interpretivism and the ontology was relativism while the epistemology was subjectivism. The research method was qualitative and the research design was exploratory-driven. The data gathering approaches and tools were derived from the human-centred approaches discussed in Chapter 3. The central approach was ethnographic. The data gathering tools used were interview guide, document review and observational protocols. In using observation as a process and a tool, three stages were observed with the aim of ensuring the in-depth gathering of validated data. In the case of the interview, there were two approaches which were employed; on-site interview and off-site interview. The on-

site interviews were face-to-face while the off-site were both face-to-face and WhatsApp voice note interviews. Both interview approaches were potent for data gathering.

In the space of validating of the gathered data, member-checking was used along with verbatim quotes to ensure that the data was not altered but captured as given. In gathering the data, ethics relating to the informants and the researcher were observed to ensure the authenticity and validity of the gathered data.

CHAPTER FIVE

PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

5.0 Introduction

In Chapter 4 of this thesis, the research method used in this study was presented in detail using Activity Theory as the presentation tool. In a similar way, it is used in this chapter as a presentation and an analytical tool. In presenting the findings, since the focus of the thesis was not to quantify the outcome of the results but focus on the rich nature of the results, the themes and categories were not scaled via frequencies. Instead, every piece of data gathered was perceived as relevant irrespective of its frequency in the dataset from an interpretivist epistemology. This strategy was adopted because I wanted to shift attention from numbers to the actual data gathered - and its relevance to sustainability in graphic design practices - for tracing expansive circles from a sustainability perspective in the light of cosmopolitan localism which is elaborated in Chapter 6.

In this chapter, the findings are reported using Activity Theory as a presentation tool. The findings are categorised into the various units of Activity Theory with a focus on graphic design practices, the associated challenges to sustainability and the emerging sustainable practices being engaged by some actors within and outside the activity context of this research. The observational guide and interview questions, as well as the ensuing categories, themes or keywords from the analysis, were developed based on an amalgamation between the Activity Theory and the Sustainability Development Analytical Grid. The analysis of each Activity Theory unit was done based on the unit's interactions with the other units through the lens of the Sustainability Development Analytical Grid

Driving the data gathering for this research was a series of sub-questions posed in a bid of seeking data that would help solve the umbrella question which is:

> *How are graphic design practices carried out in a developing nation from a sustainability perspective?*

Table 5.0: Categories and themes from findings (Author's construct, 2019)

Activity Theory Unit	Category from Questions	Themes from Findings
Subject	Motivations	Publicity-driven
		Passion-driven
		Economic driven
		Client-driven
		Passion and client-driven
	Education	Online
		Peer learning
		Peer learning and online
		Self-learning and online
	Sustainability awareness	Awareness of economic and social sustainability implications
		Awareness of economic, environmental and social sustainability implications
		Aware of economic sustainability implications only
Object	Quality of the graphic design product	Perfect finishing and colour quality
		Communicative and aesthetically pleasing
		Great layout and colour
		Readability of text, colour and objective images
		Communicative
		Clients' reactions and comments
		Colour quality
Tools	Materials and tools	Large format digital printer materials
		Paper
		Printing Inks
		Ink washing substances
		Image developing and preserving substances
		Design applications
	Factors for selection of materials and tools	Purpose of the design
		Client's specification
		Organisational and design firm standards
		Cost of material and clients' preference
		Quality of material
		Purpose of the design and life-span of the project
	Skills and knowledge for quality work	Finishing and colour quality
		Great Layout and colour combination
		Communicative abilities of text and images
		Design aesthetics
		Client's reaction and comments
		Readability of text and image
	Factors considered in the selection of production plan	Cost of materials (economic benefits)
		Health implications
		Choice of the clients
		The deadline of the work
		Consider the environmental effect
Rule	Norms and regulations for graphic design practices	Personal ethics
		Institutional or firm's standards
		Food and Drugs Authority guidelines
		Environmental Protection Agency Standards
		Design principles

Activity	Designing	Creative brief
		Gathering of required materials
		Creative manipulation of text and images
	Factoring sustainability integration in graphic design	Consider the entire sustainability
		Consider the economic aspect only
		Consider economic and social aspects only
		Not graphic designers responsibility
	Working with clients	Clients exposure to design
		Accommodation of ideas
		Clients rigidity
	Working with other graphic designers	Accommodation of shared ideas
		Graphic designers rigidity
	Production	Film development and plate making
		Printing of the design
		Collating, binding and trimming
		Packaging
	Supervision	Colour separation to packaging
		Lack of supervision
	Waste generated	Chemicals
		Trimmed pieces of paper
		Trimmed pieces of flexi materials
		Waste toners
		Films
		Plate
		Printing Inks
	Causes of waste	Trimming
		Human error
		Weak chemicals
		Offcuts
	Disposal of waste	Burning of waste
		Improper disposal of chemicals
		Burying of waste printing ink
		Collection by waste collectors
	Packaging for delivery	Plastic packaging
		Paper (original)
		Paper (used wrappers)
Community and Division of labour	Responsibilities	Supervise, design and bind
		Design, bind, accountant and secretary
		Present creative brief and guide
		Print, plate making, trim, bind and package
Outcome	The graphic design products output	Improper waste disposal
		Poor disposal of graphic design product
		Air pollution
		Introduction of electronic systems
		Wasting drinkable water
Development	Disruptions	Introduction of social media
		Electronic paperless systems
		Electronic publications

The findings in Table 5.0 were derived from data gathered through participant observation, interviews and document reviews through the use of the following sub-questions designed from an Activity Theory perspective:

1. *Why do graphic designers engage in designing graphic products? (Mind-sets) - Subject*
2. *What are the nature of the communications content and the graphic designed products produced by graphic designers? - Object*
3. *What physical materials, object, knowledge and skills do the graphic designers depend on to achieve the purpose of their activities? - Tools*
4. *What norms and conventions do graphic designers adhere to in their graphic design activities? – Rule*
5. *How do the graphic designers and multiple actors engage in the activities to produce the graphic designed product? - Activity*
6. *Who are the multiple actors who share a common graphic designed product? - Community*
7. *What are the various tasks executed by the multiple actors in the community and which actor controls the tasks? – Division of labour*
8. *What are the impacts of the graphic designed product produced on the environment, society and economy? - Outcome*
9. *What are the disruptions (tension) and innovations from historical and current graphic design practices in the light of sustainability among the units in the Activity Theory? - Development*

The next sub-sections deal with the findings obtained from the field. The research method adopted was qualitative and by implication, the presentation is captured in the form of quotes through a narrative approach with an intermittent injection of observations to enrich the discussions. Each Activity Theory unit has a series of categories, which expand into themes emanating from the findings. The presentation starts from the *subject*, moves to the *tools*, through the *rules* to the *activity*, capturing the *community of actors* with their respective *roles*. It further examines the graphic design product produced from the activity as well as the outcome from the graphic design activities.

5.1 Subject: graphic designers' mind-set

Based on the findings, the practices of every graphic designer observed and interviewed were governed by the designers' personal motivations and the kind of education the designers subject themselves to. The kind of education was also dependent on the environment within which a graphic designer finds oneself, which has a high potency to give birth to the mind-set of the graphic designer. In exploring the mind-set of the graphic

designers to ascertain the elements underlining their practices from an interpretivist epistemology in the context of the *subject* as a unit, the question that was posed was:
"*Why do graphic designers engage in designing graphic products?"*

The two major categories derived from the findings were motivations and education with the third element of sustainability awareness. The sustainability awareness was somehow independent because it did not flow from the two major elements. Figure 5.0 illustrates the trajectories of the two major elements and that of the third independent element from the findings.

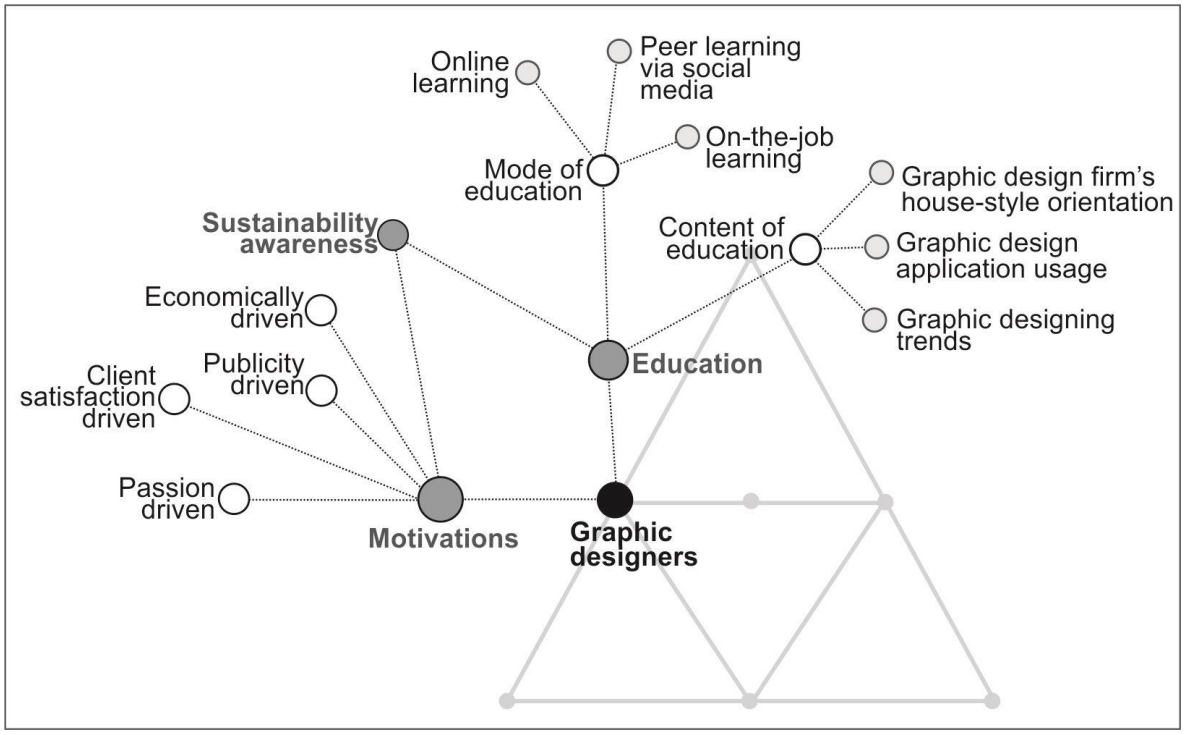

Figure 5.0: Trajectories of the mind-set of the graphic designers (Author's construct, 2019)

5.1.1 Graphic designers' motivations: the driving force

The motivations of the graphic designers were driven by four trajectories from the findings. Under the umbrella of motivations, some graphic designers shared their experiences that their engagement in graphic design practices was led majorly by their passion and thus were driven by their desire in carrying out their graphic design projects before even considering any other elements be it social or economic. In support of the passion trajectory, these were some of the key representational sampled comments given by some graphic designers:

- *I love the artwork, in fact when I was even a kid I was so interested in art. I saw that my family was not financially sound so I decided to study art in secondary school. So I did graphic design or studied graphic design. I also love colours and believed that graphic design without an understanding of colours would not succeed. In fact, doing*

all these is a matter of love or as a result of the love, I had for this profession (Graphic designer 7).

- *Design is a profession I fell in love with. In fact, when I came across a design I was thrilled by the disposition of colours but did not really know those who were behind. When I got to know those who were behind it motivated me to also join because I wanted to become one so I moved from a business class to a visual art class (Graphic designer 6).*
- *I have the passion to design and believe that, that is a gift I received from God. I love to work. Some people use design for money but I delight in designing to help others (Graphic designer 5).*
- *Designing is something that I am interested in and because of that, all my education was focused on designing. I completed a second cycle school and furthered to do designing in a professional institution (Graphic designer 3).*
- *I love art. I get inspiration from creation but I do not know how to explain how I love art. Good design always triggers me (Graphic designer 2).*
- *Design is actually a fun thing I do often. I really love designing (Graphic designer 9).*
- *I really love it since infancy. I mostly want to come up with unique ideas thus my designs are always unique (Graphic designer 10).*
- *My motivation is within. Since childhood that is what I have been doing. I just love designing (Graphic designer 15).*

In the space of client-satisfaction-driven motivation, some designers were of the view that the essence of designing is to certify clients' demands in order to remain relevant in the industry. Their ability to put their clients first as a motivational anchor upon which they work had made them who they are as far as professionalism in graphic design is concerned. Graphic designer 4 had this to say:

> *I am not in for the boss; I am in for the clients. Do not look at the appearance of the clients. I welcome all irrespective of the job size financially. I explain things to the clients giving them options that they can afford and still satisfy their needs without any compromise aesthetically or functionality. I am doing a poster for a client; the client wanted 100 copies so I advised the client to reduce the quantity in order to afford the cost, which he has agreed. He is happy and I believe that is my motivation and purpose.*

Graphic designer 16 also added in support that:

> *The greatest of my motivation is related to helping the client to solve their design problems and also the fact that clients depend on me for the promotion of their products.*

In the trajectory of publicity-driven as one of the motivations for designing, graphic designer 18 commented in support that:

> *Graphic design is something I have an interest in. I am motivated when I see my design in the public domain helping others. This motivates me whenever I start to design by envisioning my designs.*

Graphic designer 19 also shared that as a matter of motivation engaging in graphic design for the past ten years has been driven by the sheer excitement derived from seeing his work at different places. This is what graphic designer 19 added to herald his comment:

> *The major motivation for me is the fact that when I do a job and I see it in the daily graphics or a magazine in the advertising columns it makes me very happy because I see myself contributing to the economic development of the nation.*

In the case of economically-driven motivations, it was made clear by some graphic designers that their presence in the graphic design industry has less to do with passion, publicity excitement or client-driven motivations because they are family men and must earn money to take care of their families. Aside from that their firms too must be financially sustainable thus will leave no stone unturned to accomplish this in every project executed. This was what graphic designer 8 insinuated: *"What motivates me to work as a designer is the money involved because I need money to take care of my family. But you can also see yourself as someone designing to help society."* Graphic designer 22 and 21 also added respectively that:

> *I have had so many opportunities but I am trained as a publishing student so the desire to work is there. Basically, for every man or every businessman, the number one motivation is to get profit but for me, aside from the profit, it is a profession I have been practising for so long a time so I am so interested in it. Though I have other businesses, this is my favourite due to the desire for it and the need to utilize my creativity for the profession I am in. My interest is in the designing and the publishing business.*

From the findings on the motivations that drive the graphic designers, it is apparent that a large number of the graphic designers stand on their passion to get engaged in graphic design activities. Fewer people are driven by the satisfactory provision of services to clients' and monetary gains as motivators. However, there were some overlaps, where some designers were driven by both passion for graphic design practices and client satisfaction but in terms of priority placed their clients first, followed by their passion and finally economic gains to make a living. For instance, graphic designer 18 is a trained biochemist that

followed his passion in graphic design and later realised it was paying and has well-established himself in the graphic design industry afterwards. This is what the graphic designer 18 had to say: "*Engaging in graphic design was passion-driven and later realised that it was paying so I settled in the profession through self-tutoring with the aid of online tools".* It implies that passion needs to be directed or nurtured for maximum impact. Thus the next item considered as a tool that influences the nurturing of passion that directly influences graphic design practices is education. Education was therefore explored further with the intention to look out for traces of sustainability. Thus, the next sub-section deals with the findings on the mode and the content of education graphic designers subject themselves into.

5.1.2 I am what I learn: education shapes graphic designers' mind-sets

This section of the research findings looks at how graphic designers upgrade themselves in a developing nation's setting. The essence was to explore the modes of access to learning spaces and the content of what they learn to meet their design needs and the challenges of the 21st century, especially with a focus on sustainability in the field of graphic design practices. The modes of education were online learning, peer learning via social media and on-the-job learning. These were some of the comments given by the graphic designers during the interview, which were under personal online learning:

- *I upgrade myself in education through learning about updates of programmes via YouTube. I just 'YouTube' search for new trends in design application after which I select what I think can help me. There are other forums too where I share my challenges and receive feedback about how to solve my application challenges (Graphic designer 24).*
- *Yes, I mostly resort to YouTube for learning. I just follow the instructions as I watch and do the same. I believe that I need to upgrade myself if the management of where I work has not taken the initiative towards human capital training (Graphic designer 19).*
- *I receive personal education through the internet, the graphic design industry demands regular studies to know the trends of issues and to know the new software that makes designing easy (Graphic designer 25).*
- *I mostly go online to educate myself due to the fast advancement of the design industry (Graphic designer 22).*
- *I learn from online but do not learn anything concerning sustainability (Graphic designer 18).*
- *I learn on my own using YouTube to study new ways of designing efficiently that enhances the production process and reduce waste almost … (Graphic designer 6).*

- *Personally, I study online looking for current trends in layout and text manipulations. I occasionally also attend workshops for new trends (Graphic designer 16).*
- *I educate myself via YouTube watching videos on designing software skills (Graphic designer 11).*

The findings indicate that online learning is the major channel used for personal design skills upgrade in the practice of graphic design. It also connotes that most designers in a developing nation are active learners leveraging the potentials of the internet for personal skills development. All the upgrades undertaken by the graphic designers are done via YouTube making it a potent tool for meeting designers' skills needs. The fact that YouTube is an audio-visual platform also makes it convenient and easy to use from participant observation perspective. The recurrence in all cases of online learning throughout the dataset as against the recurrence of passion-driven trajectory in the practice of graphic design gives a clear implication of the influence of their desire on online learning. This affects how graphic designers carry out their graphic design practices.

The second and third modes of learning employed by the graphic designers were peer learning via social media and on-the-job learning. Regarding peer learning, it was discovered that WhatsApp was used as the tool for facilitating the exchange of ideas among graphic designers as shown in Figure 5.1. This is what graphic designer 8 had to share to throw more light on Figure 5.1:

> *I am part of a graphic design WhatsApp group, which is meant for critiquing graphic design works done by my fellow graphic designers. What happens on the platform is that, after the work is done, it is posted on the WhatsApp platform; the graphic designers pass their constructive comments, which are used to shape the design till a good design is obtained. In fact, this platform plays a major role in helping me as well as my fellow graphic designers to be abreast with current happenings in the graphic design industry while avoiding basic and unpardonable design errors.*

Graphic designer 27 argues that:

> *The WhatsApp platform is good in sharing ideas among graphic designers but some graphic designers make the platform lose its power and purpose because they just want to show their works without accepting any correction on their works conjuring answers for any corrective comment given.*

Other graphic designers shared their experience of upgrading themselves through on-the-job training. Graphic designer 7 had this to share:

I started with Microsoft Word but have graduated into using Photoshop and CorelDraw through the help of my colleague designer. For instance, at times I consult him to crop images for me using Photoshop. As my colleague crops the image, I watch and follow suit in my subsequent projects. This has really helped me. I now design so many works.

Graphic designer 10 added that "I learn from my father and other colleagues" The dataset regarding the on-the-job and peer learning looks subtle but very impactful considering the experiences shared by the graphic designers. The findings thus show a pattern of active learning by the graphic designers, which may be leveraged in transforming the mind-set of the graphic designers towards a sustainability path for sustainable futures in their design practices in the future.

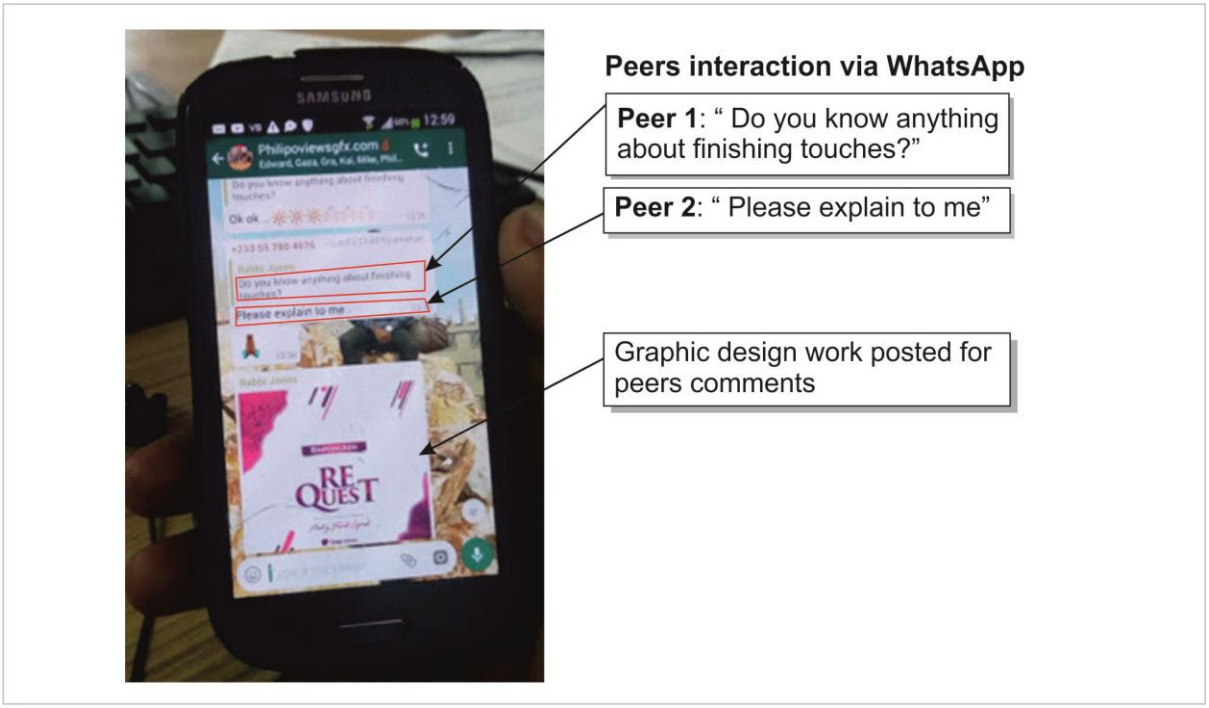

Figure 5.1: Peer learning via Social Media (Author's photograph, 2019)

The findings regarding the content of education the graphic designers subjected themselves to showed three trends, which are learning about design applications usage, designing trends and graphic design firms' house styles. However, there was no trace of sustainability in what the graphic designers learnt by way of upgrading their design styles personally. In the space of design applications usage, the graphic designers learnt design application programmes such as Adobe Photoshop tools for image editing and manipulations, Corel Draw, Adobe Illustrator and Adobe InDesign for book work and other graphic design products. In the aspect of the designing trends, areas like type selection for book work and layout styles, colour selection and informational hierarchy in text and image placement were witnessed.

With adherence to a house-style design by the graphic designers, it was observed that the way of rendering designs, the colour choice as well as type selections, image editing and placements of text and images were exclusive to some of the design firms. Also, most design firms visited had values which reflected in their designs. For instance, in one firm, it was observed that they believe in simplicity so almost all their works had a lot of white spaces with simple typefaces and layout as reflected in Figure 5.2.

Figure 5.2: Core values for a graphic design firm (Author’s photograph, 2019)

Other graphic design firms also have a rigorous system for critiquing and reshaping their works ensuring that their graphic design outputs are of professional standards. For instance in one firm, after the graphic design work is done, it is sent for panel critiques, especially in the case of projects that have a deadline of two weeks and more. After the constructive criticisms, the panel input is factored in the reworking of the graphic design product until the desired outcome is achieved. The criticisms and the redesigning are more of an iterative process for the graphic designer with the aim to transform the mind-set of the graphic designer to conform to set professional standards. In some firms also, the creative director is solely in charge of the final design. Thus all forms of design executed were sent to the creative director for certification before printing. Per my observation, the creative directors mostly gave their input for the design to suit the house-style of their design firms.

The implication of the graphic designers’ submission to a graphic design firm’s house-style or the creative director’s preference is that it reshapes the creativity of the graphic designer or may lead to the resignation of the graphic designer in the worst situation as witnessed in a graphic design firm under observation when the graphic designer fails to conform. Moreover, such a situation may pose a challenge in the introduction of sustainability in graphic design practices since the graphic designers’ creativity is directly controlled by external forces beyond their control. Thus introducing graphic designers to the practice of sustainability

might encounter hindrances when a graphic designer is not a freelancer since the graphic design firm needs to accept it before the graphic designer can implement it. The creativity of the graphic designers can shift into the space of the graphic design firm's house style or that of the client based on where the influence is coming from. But from the observation, the end of the graphic design product is a blend of inputs from both ends.

5.1.3 Sustainability awareness: do motivation and education reflect traces of sustainability?

The findings from the motivations and education showed no traces of sustainability on the side of the graphic designers. The findings during the pilot interview pinpointed the fact that the graphic designers did not understand the whole concept of sustainability so the question was reframed without using the word "sustainability" during the actual interview, rather the facets of sustainability: economic, social and environmental dimensions were referred to and surprisingly, the responses given by the interviewees showed traces of the awareness of one or two dimensions of sustainability. These were some of the responses given:

- *The knowledge about my work effect on the environment does not come to mind when designing. In the case of my design effect on the society, the works that come to mind are labels for products that are applied to the skin or for products that are eaten. When we receive the design brief from the clients, we also inquire whether the Ghana Food and Drugs Authority (GFDA) has certified their products and that they are not harmful to society's consumption. We do that because we feel it is our responsibility to ensure safety in all spheres of our designs. We want to use this approach because we want to create a standard that is recognized by the government of our nation. We have recognized that most of our clients are ignorant of the need for Ghana Food and Drugs Authority (GFDA) to certify their products so when we inform them of the need they welcome idea and adhere to our directives (Graphic designer 1).*
- *I am aware of the effect of my work on the environment, society and the associated economic benefits (Graphic designer 2).*
- *I think about the waste from my work because they remove the back of the stickers and dispose them off anyhow which affects the beauty of the environment. I am aware of my works effect on the environment, my health or the health of the society and the economy. We take milk to purify our bodily system weekly (Graphic designer 3).*
- *Due to the electricity supply, there are times the imaging of the graphic design work onto films is interrupted by electricity fluctuations, which lead to the destruction of some of the films and cause loss to the company. I mostly ask the clients especially if*

it's a funeral poster considering their audience they want to invite or get informed. The people who mostly paste the posters want to finish on time so they mostly paste about ten posters at one place with one another close to one another. Irrespective of the financial interest, you need to inform the client about the quantity that will be needed without causing unnecessary waste due to the fact that if the posters are more or if the flyers are more than the needed copies by their audience size, most of the materials are likely to go waste, which affects the aesthetic of the environment and might cause environmental challenges. The chemicals especially developer which become weak is bought by jewellers for processing their jewels. The fixers are also disposed of in the gutters. I do not care about where the chemicals disposed of into gutters lead to. Society issues; it depends on the GFDA to ensure that products on the market meet their standards. I do not have any role to play in it as a designer. What I do not engage in is when a client approaches me to design a certificate or copy and certificate bearing government or an institutional name. With that, I will not engage my service or will not do it due to the legal implications irrespective of the amount of money being offered. We breathe or inhale these chemicals used by the image-setter which are not good for our health so what our manager does is to give us milk which he believes purifies our bodies from poisons or residue accumulated from inhaling these chemicals. The chemicals, I believe are harmful so immediately after removing the film from the image-setter, I make sure my hands have been washed (Graphic designer 4).

- *I believe that clients play a major role in this aspect. In fact, my main goal is to please the clients by taking into consideration the clients brief. So I hardly even think about the environment as a component I should factor in my designs or that influences my choice of materials (Graphic designer 6.)*
- *I am aware of the fact that my works have an influence on society by providing textbooks for education and providing other information needs to them. In the case of the environmental impact, it is less due to the recyclability of the paper and rubber materials (graphic designer 21).*

The findings indicate that some of the graphic designers think about the environmental and social impact of their work and know the consequences though they have not undergone any formal or even informal training on sustainability based on the findings while others do not even think about them. These issues and others will be discussed in the next sub-section.

5.1.4 Graphic designers as subjects: the implications of the findings for design interventions for sustainability

In every activity, the subjects are pivotal for the success of the activity. Implying that the mind-set with which the graphic designer executes his or her daily graphic design practices is also integral to determining the outcome of the activity. It was, therefore, necessary to uncover the mind-set of the graphic designers to understand the driving force of their practices from interpretivist grounds to understand their graphic design output as well.

From the findings, the trajectories of the mind-set of the graphic designers were categorised into two facets which were motivations and education. The implication is that these two trajectories birthed the mind-set of the graphic designers. The facets of the motivations were passion-driven, client satisfaction driven, publicity-driven and economically driven. The highest reoccurrence in the dataset was the passion-driven motivations. Thus, most graphic designers' engagements in graphic design practices are passion-driven. The passion-driven finding is supported by Santoro (2013:20) who affirms that passion is a necessity because of how graphic design is rapidly evolving making it a challenging and competitive space. Santoro (2013:20) adds that passion though a necessity; is not an absolute and must be fuelled by creativity. Passion and creativity are therefore not mutually exclusive, thus, graphic designers need both passion and creativity to meet the challenges of design in the 21st century especially for sustainability challenges which have become a major concern for the world.

In the space of education, the two stems from which other branches were obtained by way of findings were the mode of education and content of education. The mode of education included online learning, peer learning via social media and on-the-job learning. Each of these modes has a peculiar advantage for graphic designers. The benefit associated with these modes of education is that they are not mutually exclusive, implying that a graphic designer could employ all these modes for self-development in graphic design practices in a given situation. These modes also suggest that the graphic designers under investigation were active learners with a focus on technological skills development affirming the assertion of Santoro (2013:20) that creativity of graphic designers also needs to be blended with technological skills needed for graphic design in this dynamic world. Sandhaus (2013) adds that these technical skills are affordances that have transformed what graphic designers make and how they make them. However, the contents of their education did not reflect sustainability, neither had they heard of sustainability in the context of graphic design, thus consequently they should lack sustainability awareness but the situation was different. Traces of sustainability awareness were discovered. How could this be possible? A further

investigation through informal discussions unveiled strongly that sustainability is a phenomenon largely built on ethics.

Ethics are mostly built on two pillars, the moral [from a professional body] and personal philosophies [mostly from culture and religion] (Mietkiewicz, 2016:15). Leveraging the power of ethics, graphic designers shared their experiences on how they became aware of the need for sustainability in their graphic design practices as captured in the response of graphic designers 2, 3 and 4. However, there are instances where conflict surfaces as a result of personal ethics against professional ethics, but in most cases, professional ethics always outweighs personal ethics. Mietkiewicz (2016:15) explains that professional ethics always win because when a graphic designer refuses work in the name of personal ethics [or professional body ethics] it causes financial instability leading to social pressure when practised for a long time. Mietkiewicz (2016:15) argues that due to the competitive nature of the market other designers are ready to forgo ethical stands to accept refused works that do not meet ethical standards.

Ethical issues, clients' job acceptance or rejection are issues that are difficult to handle and thus needs a skilful approach in managing the ethical challenges through advising clients to adhere to the set standards for quality graphic design output. The concept of professionalism is associated with ethics, which is meant to maintain set standards in a given profession, of which graphic design is not an exception. From a professionalism standpoint, it is therefore imperative to practice graphic design without observing the ethics of the discipline. Thus ethical standards need to be mainstreamed in a bid to promote sustainability starting from corporate graphic design firms.

5.1.4.1 The gap: challenge to sustainability in the circle of the *subject* as a unit in the Activity Theory

The Lack of education in sustainability on the side of the designers can be addressed based on the findings because the graphic designers have the needed platform for propelling the education on sustainability. For instance, the power of creativity from the passion-driven trajectory can be leveraged to create alternative means for pushing the sustainability agenda through the available channels discovered for learning. One such learning space is the peer learning via social media, which can be adopted for training graphic designers on the need to practice sustainability.

5.2 Tools: physical and intangible materials for creating graphic design products

The mind-set of a graphic designer determines to some extent how acquired skills influence the choice of materials and design considerations for graphic design products from the findings under section 5.1. The essence of researching into the tools and materials is because the tools and materials form an integral part of exploring an activity (from Activity Theory perspective) and thus the activity determines the nature of the quality of the graphic design product. The tools and materials do not only consist of physical substances only but also consist of the intangible substance of which skills are a prevailing facet for getting work done. To help move deeper into the facets of the physical and intangible tools used for graphic design practices the question posed was:

> *What physical materials, object, knowledge and skills do the graphic designers depend on to achieve the purpose of their activities?*

The two categories derived from the findings based on the questions were:

1. Physical materials and tools for graphic design
2. Skills and knowledge for graphic design work
    a. Graphic designing and design application usage skills
    b. Factors for selection of the materials and tools
    c. Factors considered in the selection of production plan

All these categories also have sub-themes which give a deeper exposition on the nature and usage of the tools and their implications in the light of the challenges to sustainability in graphic design practices from a developing nation's perspective. Figure 5.4 gives a clear picture of the materials and tools with associated themes from an Activity Theory perspective.

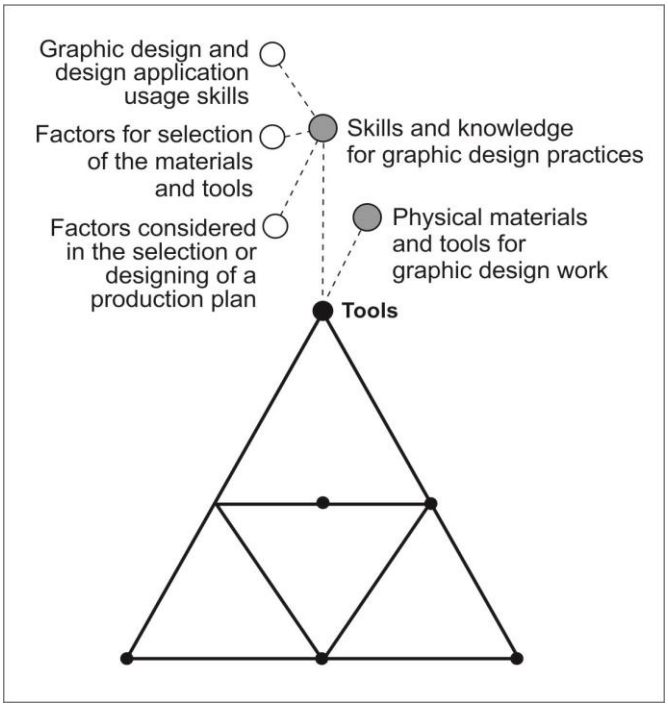

Figure 5.3: Physical and intangible tools for graphic design (Author's construct, 2019)

5.2.1 Physical materials and tools for graphic design

Many tools and materials were discovered during field visits. They ranged from simple paper to complex machines such as laptops and image-setters as well as advanced offset two-colour and four-colour presses (printing machines). The materials and tools were classified into two categories, which were materials and tools and technological design application tools. The physical materials mostly consisted of large-format digital printing materials such as self-adhesive vinyl (SAV), polyvinyl chloride (PVC) flex banner, eco-solvent inks, papers (newsprint, art paper, art card, bond paper, carbonated paper, bank paper, strawboard, chipboard and many more). All these papers have different properties. Some have glossy surfaces, while others have matt with different surface grains. In the case of printing inks, the two which were recorded were offset and sublimation inks. The offset inks were used by the offset printing machines while the sublimation ink was used by the large format digital printing machines.

Others were ink washing substances, image developers and image preserving substances. Other dangerous chemicals found in use were petrol and kerosene. These two chemicals were so dangerous that they could cause a fire outbreak. An eye witness purported that these chemicals caught fire in his presence in one printing press. The printers resort to it due to their low cost as compared to the appropriate ink washing chemicals. Table 5.1 gives specific tools and materials used in the respective stage in the graphic design practices or production stage.

Table 5.1: Graphic design tools and materials and their purposes (Author's construct, 2019)

The graphic design production stage	Tools and materials	Purpose
Pre-press	Notepad / Smartphone	For recording design brief
	Whiteboard	For recording itinerary of works to be done for the day
	Computer (Design Applications: Corel Draw, Adobe Photoshop, Adobe InDesign, Illustrator)	For designing the graphic artwork.
	Image Setter	For separation of design into CMYK (cyan, magenta, yellow and black colours onto a film).
	Films	For receiving separated colour in the form of images
	Offset lithographic plate	For carrying images transferred from the film to be used for printing
	Developers and fixers	The developer was used for developing the films for the images to appear and the fixer for preserving the images on the films.
Press	Papers (newsprint, art paper, art card, bond paper, carbonated paper, bank paper, strawboard, chipboard)	The graphic designs are printed on the papers
	Printing inks and spatula (Inks are not vegetable inks)	The inks were used for transferring the designs unto the paper while the ink spatula was used for scooping the ink onto the rollers of the printing machines.
	Offset printing machines	For printing the design work with the aid of lithographic plate, offset inks, blankets and ink rollers.
	Die-cutter	For cutting designed boxes to the desired shape
	Roller washing and plate cleaning chemicals: Petrol, Kerosene, fountain solution, deleting fluid	For washing excess offset inks, deleting unwanted images also for preventing printing errors.
Post-Press	White glue	For perfect binding and other binding works such as envelopes, certificate folders and more
	Guillotine (Paper cutting machine)	For cutting papers to the press sizes for printing and trimming off bleeds and unwanted areas on a work.
	Lamination rubber	For laminating printed works
	Ultraviolet coating	For coating printed works
	Automated stapling machine	For saddle stitching of books
	Lamination machine	For making lamination possible

Figure 5.5: Some physical tools/equipment and materials for graphic design (Author's photograph, 2019)

Further inquiry through interview revealed findings that were inconsonant with the discovery from the observations. These were some of the responses given, which gives details into the tools and materials used:

- *The clients bring the materials to be used. I mostly prefer to laminate covers because of the glossy finish and the protection it gives. For instance, when it comes to some invitation I do not advocate that but on the grounds of financial or economic implication and not on environmental or societal reason. The reason why I advocate for some clients to avoid unnecessary and expensive finishing is based on the time-*

life of the product and the client's financial strength. I designed work for some people or clients who said they did not have much money and were working with a tight budget. I, therefore, did all the pages black and when they saw it they rejected it and requested for a full-colour work. I, therefore, believe that my influence on the choice of materials is limited based on the clients' specifications (materials). You listen to the client's advice and think through for the right materials because just like my instance they did not know much about design and the consequences based on the chosen material. I used Corel Draw for layout, word for typing, PDF for page layout and Photoshop for image editing (Graphic designer 5).

- *We use approved developer, fixer and films for the image-setter which creates the images on the films to be transferred unto a plate for lithographic printing or offset printing. Plates, inks, papers, oil for the printing machines and roller wash are some of the materials we often use. We do not use petrol like other presses because of the effect it has on the roller. I also use a fountain solution. Our roller wash is very expensive but my manager/creative prefers we use the required chemicals to prolong the life span of our machines. We have a plate cleaner but it does not work the way we want so we add acid to clean stubborn stains (Graphic designer 6).*
- *We use so many types of papers. Tools such as computers and design applications such as Adobe Illustrator, Coral Draw, and Microsoft Word are mostly used (Graphic designer 7).*
- *We use Adobe InDesign for most of our designs and sometimes Adobe Photoshop and CorelDraw. We use developers and fixes. All types of papers are used here (Graphic designer 8).*
- *Corel Draw and Adobe Photoshop paper and flex banner are used for the large format digital printers. I use the Adobe Photoshop for image enhancement and Corel Draw for vector design (Graphic designer 14).*

All these comments confirm the findings from the observations. However, in the case of petrol as a roller washer, two firms visited did not use it as seen in the comment of graphic designer 6. The essence was to prevent their offset printing machines form deteriorating though petrol and kerosene are cheap. The offset printing inks were used for all purposes which pose a threat to human health because some of the printings are done for packages that have direct contact with the food substances that they used for packaging. The universal use of the non-edible offset printing inks meant for all products is a major social sustainability issue that needs to be addressed during the design intervention workshop in a bid to propose holistic sustainability practice in graphic design. Much about the tools and materials challenges to sustainability is associated with the actual graphic designing activity, which will be considered in detail in the activity space in the subsequent sub-topics.

5.2.2 Intangible tools for graphic design practices: unveiling the hidden design knowledge and skills for graphic design practices

The intangible tools for graphic design practices envelop skills and knowledge for graphic design practices. These skills are recognised as tools from Activity Theory stance though intangible, they are leveraged for the execution of graphic design work. The skills and knowledge are classified into three areas as captured in Figure 3.5 which are:

1. Graphic design and design application usage skills
2. Factors considered for selection for materials and tools for graphic design practices
3. Factors considered in the selection or design of graphic design production plan

In seeking for data on graphic designers' skills in designing and application usage, the graphic designers were observed in their place of work. I discovered that the graphic designers were on top of their games in respect of acquired design application skills. They knew where to get the right virtual tools and how to use the tools to obtain the required design effect or outcome in Corel Draw and Adobe Photoshop. I could see mastery in the manipulation of text and images in the virtual environment of the design applications. However, others were glued to Adobe Photoshop for all purposes irrespective of the fact that it is meant mainly for image editing. It was due to the fact that they were not conversant with Corel Draw and thus fully resorted to Adobe Photoshop. The only challenge they encountered in the usage of Adobe Photoshop for every work was that there were registration issues when the graphic design was printed in the press other than print-on-demand outlets. The other skills I witnessed were the use of Adobe Acrobat Reader for page layout of any volume of pages within a twinkle of an eye. Further inquiry revealed that there was a special plugin for that purpose. In a nutshell, I can conclude on the design application skills that the graphic designers were a force to be reckoned with in their acquired skills. However, being skilful in design application usage does not guarantee skilfulness in graphic designing, thus the next paragraph throws light on the graphic design skills of the graphic designers.

The second aspect of point one under skills and knowledge was focused on graphic design skills of the graphic designers I observed as well as interviewed. The graphic designers gave their exposition on what a quality graphic design product is which invariably reflected their design skills to some extent. I moreover also observed what the graphic designers were designing and even copied some of the designed files under their permission, which will be shared in this section to throw more light as an outcome of their graphic design skills. Figure 5.6 shows some of the graphic designers who were observed as they were working.

Figure 5.6: Graphic designers being observed as they design (Author's photograph, 2019)

The findings on the graphic design skills from observation and interview unveiled five trajectories as the skills and knowledge with which they worked. Figure 5.7 gives a presentation of the graphic design skills and their trajectories. Further to this, expositions are given to elucidate the acquired design knowledge. The acquired design knowledge will be validated with the actual design samples picked from the graphic designers to throw more light on how their design knowledge has been put to practice to produce works that reflect their design skills in the preceding paragraphs.

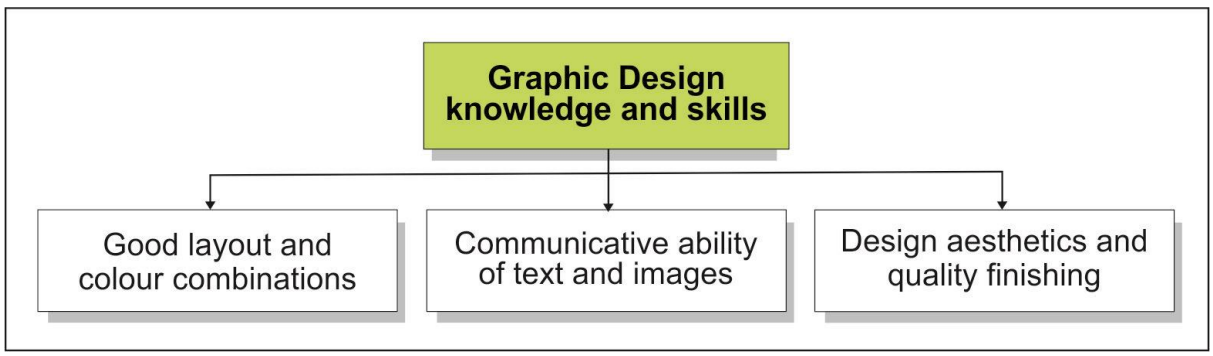

Figure 5.7: Graphic design knowledge and skills (Author's construct, 2019)

5.2.2.1 Indispensable tools for graphic design practices: Good layout and colour combinations, the communicative ability of text and images, design aesthetics and quality finishing

In exploring in detail the acquired knowledge and skills for graphic design practices in light of Activity Theory, the skills aspects that the graphic designers pointed at were good layout and colour combinations, the communicative ability of text and images, design aesthetics and quality finishing. The skills facets resulting from the findings were not mutually exclusive because there was overlapping based on the responses given by the graphic designers, implying that these skills are all integral graphic design skills for a quality graphic design piece. These are some of the core expositions given on graphic design knowledge:

- *In graphic designing ones skills should focus on colour majorly. A black font comes with a light background. For instance, when you look at the work I am designing, it is a funeral poster and for that matter, I cannot use wedding colours at all. It is not a wedding work so I cannot use wedding colours such as light pink, light blue etc. I need to use red and black and then add a bit of the colour of the picture used. More so you need to add brown a bit due to the meaning of the colours. The quality output of your work depends on the machine used for the printing as well. Also, the layout should be clear to make reading easy (Graphic designer 6).*
- *Quality work is dependent on the layout and the quality of the print. I do not see the design with a background as a quality piece. Design is more about communication so if the piece does not communicate well that will be labelled as a poor work resulting from poor knowledge and skills in design (Graphic designer 15).*
- *A good design should be driven by design skills aimed at making text readable while ensuring that the right colour combinations are obtained through a good understanding of colour. Selected images should be clear to support the text (Graphic designer 9).*
- *A quality graphic design product, though in our environment, aesthetic is a key component which clients consider we try to go an extra mile by ensuring that the works communicate with tacit clarity while ensuring that we do not downplay the aesthetical values. In the long run, we satisfy ourselves and the clients with what we know. At the end of the day, the graphic design product should be of a standard. We use serif fonts and we also place emphasis not so much on the colour but the images because of the images when well-managed advance the communicability of the graphic design product (Graphic designer 7).*

- *A quality graphic design piece is more concerned with the ability of the design to communicate to the target audience which is actually the purpose of the design. The aesthetics are primarily for attraction which at times becomes the centre stage instead of the function of the work. I, therefore, agree with the quote, "a good design poorly printed is ok" because it will still communicate but a bad design nicely printed is like flogging a dead horse because the designs communication abilities are flawed while a poor design poorly printed is off the hook but a good design nicely printing is excellent (Graphic designer 16).*

These expositions give a clear picture that the graphic designers have the requisite knowledge needed for graphic designing. Graphic designer 2 summaries the responses on design knowledge with his statement:

> *"Aesthetically nice but functionally poor graphic design will not work because graphic design is not a decoration but a functional art that is communicative oriented. Graphic design needs to be nice and should be clear. It should be able to communicate very well. We design for the brain and not the eye since it has to be understood".*

These telling graphic design expositions reflecting the design skills are not enough however to reveal the graphic design skills of the graphic designers. Thus there is a need to move a step further by validating the design knowledge expositions through selecting some of the graphic designers' works to bring out their graphic design skills. Figure 5.8 shows some of the graphic design samples. Referring to Figure 5.8, all four graphic design works reflect the three knowledge expositions by the graphic designers observed and interviewed. Assessing critically the graphic design works in Figure 5.8, it is clear that the designs have a good layout coupled with communicative abilities of the text and images. The texts are readable and legible while the images are not subjective in their meanings rather they are objective leaving no room for any other interpretations. Aesthetically, the designs are attractive because they have white spaces that make the texts and images legible. The images are well positioned with the appropriate colour combinations.

In summary, the design knowledge and skills of the graphic designers are justified by the graphic design products they produce. The graphic design knowledge and skills are brought to bear by utilising their skills in through the graphic design applications. These two sets of skills from the findings make it clear that graphic design practices in the 21st century are driven by not only the technological advancement but also depended on the more important anchor of graphic design knowledge and skills.

Figure 5.8: Sample graphic design works
(Sources: Vantage Solution, Graphite designs and Immor graphics, Ghana, 2019)

5.2.2.2 Intangible tools for graphic design practices: Selection of tools and materials for graphic design production

Another integral intangible tool for graphic design practices from the findings was the selection of the tools and materials for graphic design production. The tools and materials are also integral aspects of graphic design production since it determines the outcome of the graphic design work. The selection of the tools and materials are based on certain factors that graphic designers consider. These factors are contextual oriented and thus cannot be generalised which is not even the focus of this thesis. The factors also depend on the house-style of graphic design firms. The factors leveraged by the graphic designers who were under observation and interviewed were:

1. Purpose of the design
2. Clients' specifications
3. Cost and quality of materials
4. Graphic design firms' standards

These factors are not exclusive, indicating that they are all needed as far as the selection of tools and materials are concerned for graphic design practices or production. For a better understanding of each, I will resort to the responses given on each from the graphic designers' daily practices and experiences. In the case of the purpose of the design as criteria considered in the selection of materials these were some of the core responses given:

- *My choice of materials depends on what the work is meant for. For the invitation cards, the clients bring the cards so we do not consider the lifespan of the information as the need to print either few but whatever the client requests we print without cutting the quantity (Graphic designer 1).*
- *The selection of materials is dependent on the purpose of the work and the life-span of the project (Graphic designer 16).*
- *The size of the job, one-time job or short-run job determines what material to use. For short runs, we just use the computer to plate (CTP). These are the basic factors that determine what we consider before the selection (Graphic designer 18).*

The purpose of the work as a criterion is considered when the client is a novice thus relegating the choice of material into the hands of the graphic designer. In a situation where the client is an expert or knows much about his work and the materials needed, the graphic designers just adhere to the demands of the clients. These are some of the key responses that support the selection of materials based on clients' specifications:

- *Different papers have different effects so what we do is we mostly select the materials based on the preference of the clients and the quality I want to achieve.*

Some clients come with the intention of using the material but upon further persuasion, they change to accept what was propose (Graphic designer 21).

- *… society has created a path that has become accepted by them. For instance, most of the clients want their invitation to be glossy and that influences our choice of materials selection. Instead of using art card for packages, we prefer to use folding boards because it does not crack when folded for packages. So the choices of the materials are dependent on their quality and what is accepted by society (Graphic designer 2).*
- *Materials are selected based on clients' preference or specification (Graphic designer 3).*
- *When the clients come with a paper type we adhere and use the choice of the clients. We or I mostly advise them based on the purpose of the product being produced. If it's a flyer, I mostly advise the client to use expensive materials because people even hardly read the flyers they receive even me, when I receive a flyer, I do not waste my time to go through because I am busy. But if the client still insists that his or her choice is what he or she stands by, then I will do it without further explanation or persuasion (Graphic designer 4).*
- *I do not consider anything. I just follow the client's description (Graphic designer 11).*
- *I depend on the clients for the selection of materials (Graphic designer 9).*

The other factors the graphic designers consider aside from the clients' specifications and the purpose of the design is the cost implication of the material. The graphic designers inform the clients of the cost implications of their choices, to ensure that the total cost of production and profit margins are within the budgetary capabilities of the clients. The following are some of the conclusive responses that concretise the addition of cost implication as another important facet considered in the selection of graphic design materials:

- *It depends on the customer to determine what material he/she wants. However, at times, the clients' preferences are far-fetched and they are not ready to adhere to what I think can help in most cases. More so, they do not think about the environment or the society I guess. Anyway, I have not conducted any survey into it so this cannot be justified. Now posters are all done on self-adhesive vinyl (SAV) so they actually direct the choice of the materials (Graphic designer 23).*
- *I just follow clients' directives and a few cost implications (Graphic designer 26).*
- *We sometimes consider cost implication to determine what materials to use as profit margins are also my focus. When it comes to printing with the large format we leave the ink quality at normal because anything extra will lead to over usage of ink and a*

strong scent and unbearable atmosphere for clients and the machine minders(Graphic designer 24).

- *We do not consider anything relating to the environment and society. What we mostly consider is the economic benefits; thus are the materials cost-effective for the clients and us? We also go strictly with the preferences of the clients in terms of their choice of material. We mostly advise them based on the aesthetical output of the graphic design work vis-a-vis the material choice …. (Graphic designer 4).*

Another important selection aspect has got to do with the quality of the material for the graphic design work. From a participant observation perspective, I was given a chance to work for a client who was much concerned with the quality of the material since according to him it reflects his status in the community. Though he was not ready to compromise his choice regarding quality, he was also not ready to pay for anything above his budget. However, we managed to get him material in mid-range to meet his choice. Graphic designers 25 and 22 had these to share respectively:

- *When selecting materials, I look at the quality and durability of the material. Every material used for printing of design work has a bit of pollutant either aesthetic pollutant from indiscipline disposal or chemical pollutant affecting water bodies. Plastic materials also rather do not degrade as compared to the papers. Thus I consider all these qualities in the selection of materials.*
- *When selecting the material, we consider the durability and quality. We also consider the effect of the material on the machines and clients preference. Some inks have chemical components like acid content which come from China. The inks with the acidic component mostly affect the rollers of the machine and increase tear and wear.*

These comments imply that the quality of the material is also a major factor that should not be downplayed due to the social value clients attach to them, thus the quality of the material generates attachments and brings socially-emotional fulfilments to clients.

Aside from all the factors discussed for the selection of materials for graphic design work, the other which might be necessary for the company or the firm is for the firm to add their 'signature' which becomes the imprint for the graphic design firm. This imprint is not the usual name inscriptions at the back or at the tip side of the graphic design work but a standard that is most peculiar to a graphic design firm characterised by the type of materials used and how the materials are used as supported by graphic designer 6 who added that:

It has to do with organizational standards when it comes to the factors we consider when selecting materials for graphic design work. For instance, when it comes to the usage of water by other press houses for the offset printing machine, my boss

speaks against it and prefers rather we use fountain solution based on the effects of the solution on the printing inks. These are the things which affect the choice of material. The clients mostly go with what we have for them or select for them.

Though not much was said on the organisational standards as a criterion for selection of graphic design materials, the exposition given by graphic designer 6 makes it a competitive advantage for corporate graphic design firms ready to compete for their way through the maze of competitors in the design field for recognition by prospect clients.

5.2.3 Intangible tools for graphic design practices: unveiling the hidden skills in selection or designing of the graphic design production plan

The third intangible tool that was discovered through interview and in the observation of the graphic designers was the skill for selection or designing of the graphic design production plan. Challenges to sustainability are mostly determined by the selected or designed graphic design production plan based on the findings in this research. The skills in designing a production line or selecting a production line are related to the factors that a graphic designer or creative director considers which determines how a graphic design production line is approached. Dwelling on the factors that shape the graphic design production plan, the dataset was skewed towards two trajectories, which were economic and social (health) with intangible consideration for the environment. These were some of the general experiences shared:

- *I dispose of the ink waste into the gutters. I cannot do anything about the disposal of the ink and its associated consequences from our actions. I cannot use the design to reduce the ink usage since automatically the ink is set to print. We can hardly do anything about it after the printing is done because the clients are in full control (Graphic designer 3).*
- *As a matter of truth, we do every work irrespective of the effects of the work on the society, and the environment with only economic consideration in our production plan. Whatever the clients' request, we do likewise. However, some clients also deal directly with the Ghana Food and Drug Authority and the Environmental Protection Agency personally. In such a situation the environmental and social consideration comes to play. There was an instance when a client came to design a label, the client and I worked on the label for so many times before it was accepted by the Ghana Food and Drug Authority. The Ghana Food and Drug Authority and the Environmental Protection Agency indirectly guarantee environmental and societal safety, ensuring economic and environmental sustainability. But if the person fails to submit the packages or labels I cannot do much because I am just a designer. (Graphic designer 5).*

- *We do not factor the environment and society in our production process. In fact, it does not even occur to me because the company is driven by an economic interest or profit margins so sacrifice the environment and the society for the economic benefits (Graphic designer 6).*
- *In every work, there is hazard associated. The rays from the computers affect our eyes but we do not consider it critical. In the case of the toners for printing, they are also hazardous but unfortunately, the workers, as well as the designers, do not protect themselves against such circumstances. All we are interested in is how much profit can we make from the project which influences our production plan (Graphic designer 7).*
- *No, I do not consider my production plan effect on the environment and society (Graphic designer 14).*

The graphic designers that considered the social implications focused on the health implication in their design decisions which invariably transcend into the space of graphic design production: These key comments reflect graphic designers' decisions on health implications associated with production:

- *I always check the types of the materials and the hazards they carry as far as my health and that of the workers are concerned (Graphic designer 26).*
- *I consider my health very well so the production plans I choose are mostly those that can reduce stress. If I check for instance using the traditional press process against the print-on-demand and the fact that the quantity of the work is small I will rather opt for the print-on-demand because that is less stressful (Graphic designer 25).*
- *I do consider my health and that of the society to some extent but it is not really a focus when I am designing. I hardly include that as a design decision (Graphic designer 19).*
- *Health-wise, we consider the scent of the ink. The large format inks used to have a strong scent so the Ghana Food and Drugs Authority intervened to stop the importation of such inks. Currently, they allow the eco-solvent inks for the large format printing (Graphic designer 1).*
- *Yes, I do consider my health implications in my production plan (Graphic designer 3).*

While most graphic designers were immersed in routine production plan for economic benefits, graphic designer 2 could see so many possibilities and argues that *"the factors considered in the design of production plan are very relative based on the cost of materials through health implications, choice of clients, set deadlines to environmental effect considerations*." The assertion of graphic designer 2 posits that there are limitless factors that a graphic designer can consider that will influence production plan and even affect the

graphic design product output based on the orientation of the graphic designer as captured under the mind-set in section 5.1.2. All these factors are not mutually exclusive but tentacles of a production plan requiring a deeper understanding as factors needed to be considered during graphic design production. Other graphic designers on the extreme opposite side did not recognise the need to factor health implications rather they adhere to their routine production plan: These are the comments they gave to throw light on their extremist approach:

- *I do not really consider my graphic design production influence on my health and that of the society (Graphic designer 2).*
- *We do not really consider the health of people or society. For now, we do not think about the works or the production implication on the society and the environment (Graphic designer 21).*
- *I terms of design and its relationship with health implication especially on the society, I do not consider all these but I believe that the workers should adhere to the standards of hazards by following the right procedures (Graphic designer 20).*
- *We do not really consider the health of people or society. For now, we do not think about the works or the production implication on the society and the environment (Graphic designer 22).*

With the exception of the graphic designer 5, where the situation demands that the design of the label meets a set standard and those who are health conscious, all the other graphic designers under their own prerogative did not even think about any factor outside the economic and social (health) spaces. The findings imply that in terms of productions considerations, economic and social factors are highly esteemed by the graphic designers in order to make ends meet and keep their companies surviving in the business terrain. The situation paints a picture of economic-driven design considerations for graphic design production plan overshadowing the health consideration for graphic designers who are health conscious.

5.3 Rules: norms and regulations for graphic design practices

The previous sections gave findings-based expositions on graphic designers' mind-sets and tools for graphic designers' practices. The application of the mind-set of the graphic designers is dependent on tools usage which in turn is also governed by rules and regulations in order to obtain desired and socially acceptable graphic design product from the Activity Theory perspective. In exploring norms and regulations in graphic design practices, the question that was used for the data gathering was:

> *What norms and conventions do graphic designers adhere to in their graphic design activities?*

The findings on the norms and regulatory guidelines that were employed in graphic design practices are summarised in Figure 5.9.

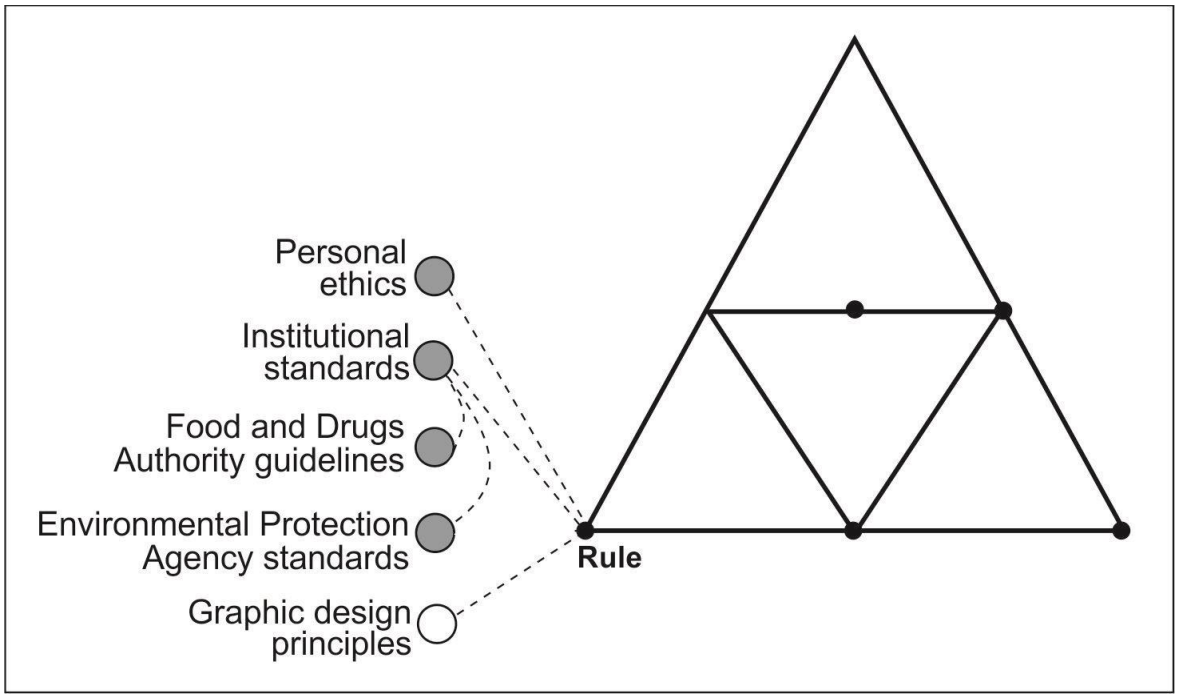

Figure 5.9: The trajectories of rule leveraged by graphic designers in their practices (Author's construct, 2019)

5.3.1 Rule: personal ethics

Personal ethics is more connected to moral and cultural values which are encapsulated by the [graphic designers'] religious beliefs as witnessed in the observation on the graphic designers. The graphic designers made it known in an informal discussion that they do not accept works that go against their religious faith. To add to the personal ethics in relation to graphic design practices, graphic designer 6 reiterated that:

> *"though the company is not mine because I share a common faith with the owner of the design firm making me feel at ease to regulate the works from clients based on my faith that stands on moral ethics and not professional ethics because I have issues with the professional ethics."*

Graphic designer 6 added that:

> *"I also try to avoid legal issues which are more of professional ethics, for instance when a client brings a work such as making a copy of an institution's certificate and altering the name on the certificate, I will never engage myself in it due to the legal implications associated. When the project is not a morally sound project, I also try to avoid it because my guilty conscience will not let me off the hook of guilt.*

Others could not distinguish their personal ethics from their institution standards, because they believe their personal ethics do not count because their institutional ethics overrun their personal ethics afar as they are not freelancers. The next sub-section elaborates on the institutional standards as a rule governing how to design activities are carried out.

5.3.2 Rule: institutional standards

The activities of the graphic designers at Asafo are basically non-regulated from the graphic design firms' perspective. All they look out for are aesthetic and typographic errors. Most of the content censoring is done by the graphic designers who are well-informed about the interesting facets of their profession. However, most of the graphic designers if not all are non-registered members of the following emerging creative or design bodies:

1. Advertising Association Of Ghana
2. Ghana Institute of Graphic Arts
3. Ghana Design Network
4. Design Network Africa

Surprisingly, the focus of Ghana Design Network does not encapsulate professional or ethical standards. Further, the core mandates of Ghana Design Network, are to educate, advocate, inspire, create social media presence, create and nurture network, leverage the potentials of new media for active communication and creating a potent platform for exchange programmes meant to benefit designers and design students (Ghana Design Network, 2019). In the case of the Advertising Association of Ghana, the body is trying to pass an advertising bill to help regulate advertising content. Fortunately, what the Advertising body is trying to initiate is already done by the Ghana Food and Drugs Authority and the Ghana Environmental Protection Agency in the arena of social considerations aspect of advertising content as well as the associated environmental impact. The Ghana Food and Drugs Authority has guidelines that regulate the informational content of packages, labels and advertisements, either in radio, print or television. There are forty-one guidelines that are supposed to be adhered to in the designing of graphic products that are meant for drugs, cosmetics, household chemicals and medical devices (GHANA FDA, 2013:1-8). Table 5.2 shows selected regulations that are pertinent to the graphic design profession.

Table 5.2: Selected Ghana Food and Drugs Authority guidelines for graphic designers

Sn.	Ghana Food and Drugs Authority Guidelines
1.	The final version of the advertisement in whatever form shall be submitted for vetting before publication.
2.	Advertisements considered unacceptable by the Authority will be communicated to the advertiser with the unacceptable information or illustration clearly clarification on the ruling will be given in writing.
3.	The duration of an approval for an advertisement will be one (1) year from the date of approval.
4.	Any alterations in the format of the approved script, film or story sketch without express written permission of the Food and Drugs Authority shall render the approval null and void and shall attract a penalty.
5.	Notwithstanding the above, the Authority reserves the right to revoke approval as a result of new evidence concerning the product or public safety or product efficacy or quality.
6.	If approval of an advertisement is withdrawn during the one year period of approval, an appeal may be made to the Minister in writing and accompanied by supporting information. Such an appeal shall be lodged with the Minister within twenty-one (21) days of notification and supporting materials provided within sixty days of notification.
7.	In the event of any publication of an advertisement not approved by the Authority, the sponsor, advertising agent and the advertising media organization shall be jointly and severally liable.
8.	An advertisement shall not contain material, which refers to recommendations by scientists or health professionals or which refers to recommendations by celebrities or well-known organizations, who because of their status could encourage consumption of products.
9.	An advertisement shall be accurate, complete, clear and designed to promote credibility and trust by the general public and health practitioners. Statements or illustrations must not mislead directly or by implication.
10.	No advertisement shall be framed in such a manner as to exploit the superstitious belief and/or induce fear in the consumer to purchase the product. No advertisement shall contain words such as magic, miracle or mystical; exotic descriptions, such as ‘super potency’ or such other words as to induce the daily and continuous use of the product.

(Source: GHANA FDA, 2013:1-5)

The guidelines one to seven elaborate on the approval of a graphic design material or product. The approval is essential to the authority because these guidelines are to help ensure sanity and standards of designs for the society's safety, which is in-line with social sustainability. The guidelines from eight to ten are however meant to regulate the content of the graphic design product. The expositions in guidelines eight to ten are detailed to aid graphic designers to leave no stone unturned for quality graphic design output that leverage creativity but meets the set standards. All these pinpoints that much is being done for social sustainability in the sphere of graphic design products meant for drugs, cosmetics, household chemicals and medical devices. These guidelines though necessary might be redundant when designers struggle in their implementation. Some graphic designers had these experiences to share in their engagement in the implementation with Ghana Food and Drugs Authority guidelines:

- *…. Ghana Food and Drugs Authority is sanitizing the product and package environment. Even now radio adverts and billboards need certification before they can be allowed to be aired or displaced in a public domain. If you have noticed, when you look at the current billboards all products adverts are certified with the word; "vetted by the Ghana Food and Drugs Authority". Very soon, the concept of verification will soon be adopted by us but currently, we do not check for those details and concerns. As of now, we do not do it (Graphic designer 3).*
- *…. Some clients come with their designed work, all they need is for the designer to process it and get it printed. In this case, your opinion does not matter but in the case of those who start the design from scratch with me, I advise for the right thing to be done by sending the design for vetting at the Ghana Food and Drugs Authority office. Some clients feel it is necessary to check all certifications from the Ghana Food and Drugs Authority as it is a requirement now (Graphic designer 4).*
- *…. In case of my design effect on the society, the works that come to mind are labels for products that are applied to the skin or for products that are eaten. When we receive the design brief from the clients, we also inquire whether the Ghana Food and Drugs Authority has certified their products and that they are not harmful to society's consumption. We do that because we feel it is our responsibility to ensure safety in all spheres of our designs as far as the clients work for society. We want to use this approach because we want to create a standard that is recognized by the government. We have recognized that most of our clients are ignorant of the need for Ghana Food and Drugs Authority to certify their products so when we inform them of the need they welcome the instruction and follow suit (Graphic designer 1).*
- *…. Mostly what I do is to lead the clients to achieve the Ghana Food and Drugs Authority certificate. So what I do so to send them to Ghana Food and Drugs*

Authority. I recently I refused to put a code on the label so I lost that job but I am ok because the safety of the society is important than the money I'd single person will gain (Graphic designer 15).

Most of the graphic designers were jointly cooperating with Ghana Food and Drugs Authority because guideline seven of the Ghana Food and Drugs Authority states: "*In the event of any publication of an advertisement not approved by the Authority, the sponsor, advertising agent and the advertising media organization shall be jointly and severally liable* (GHANA FDA, 2013:1-2). The caution from the Ghana Food and Drugs Authority connotes legal action against offenders in a three-fold responsibility approach, making the graphic designers also liable for any infringement, which has possibly led to the compliance by most graphic designers.

Let us now move into the space of the Ghana Environmental Protection Agency and how the graphic designers interact with them in their graphic design practices. Unfortunately, the graphic designers do not interact with them as they do with the Ghana Food and Drugs Authority. The clients are actually informed to deal with them directly by the graphic designers. This is because the Ghana Environmental Protection Agency though considers the design and advertising, their major focus is on ensuring that the activities of graphic design production do not harm the environment as stated in their regulatory document (EPA, 1994:3). These are the regulations that deal with graphic design directly from the Ghana Environmental Protection Agency (1994:17):

- *Containers and packaging of pesticides:*
  (1) The Agency may prescribe the containers, labels and the manner for packaging of pesticides at the wholesale and the retail levels.
  (2) Where a container, label or packaging is prescribed by the Agency for a registered pesticide, a person shall not:
  (a) manufacture, import, export, distribute, advertise or sell a registered pesticide otherwise than in a package or container prescribed for the pesticide, or
  (b) alter the label of a pesticide so as to misrepresent the nature of the pesticide.

The regulation for containers and packaging design is basically meant to help secure the society from advertisements that are meant to exploit the public's ignorance. In the case of the environment protection from unscrupulous activities, Ghana Environmental Protection Agency (1994:3) stipulated that it is responsible for controlling the generation, treatment, storage, transportation and disposal of industrial waste. Ghana Environmental Protection Agency (1994:3) adds that it will secure by itself or in collaboration with any other person or body the control and prevention of a discharge of waste into the environment and the protection and improvement of the quality of the environment. The responsibilities by the

Ghana Environmental Protection Agency are basically in line with environmental sustainability but the question is: Do they enforce the regulations and are the graphic designers aware of their responsibilities as well in the light of their environment according to the Ghana Environmental Protection Agency? The findings were shocking because, in the interview with the graphic designers concerning the regulations they submit to, apart from Ghana Food and Drugs Authority, nothing was mentioned about the Ghana Environmental Protection Agency signalling that the graphic designers are not aware of their responsibility by way or environmental concerns. This implies that any environmental consideration taken by the graphic designers are as a result of ethical stands. The last to be talked about are the principles of design as also a rule for designing. Fortunately, the rule is more connected to skills thus it has been handled under section 5.2.2.1.

5.4 Activity: graphic design practices in Asafo in retrospect

The previous discussions in this chapter elaborated the findings on the *subject*, the *tools* and materials with which the graphic designers worked and the *rule*, which has got to do with the regulations that control the content of advertising materials or a graphic design product. The next unit is the *activity*. For effective presentation, the *activity* unit will be merged with the *community* and *division of labour* units. The reason for the merger is because it is very difficult to separate *community* and *division of labour* units from the *activity* owing to the fact that their essence manifests in the activity. In the Activity Theory, the *activity* unit serves at the centre where every unit receives life by interactions with one another unit to produce the desired object meant to transform lives in the society. In this research, the activity reflects the various production stages graphic designers engage in for creating graphic design products. The questions that helped with the exploration of the graphic design activities were:

1. *How do the graphic designers and multiple actors engage in the activities to produce the graphic designed product?*
2. *Who are the multiple actors who engage in graphic design production?*
3. *What are the various tasks executed by the multiple actors in the community and which actor controls the tasks?*

The responses to these questions were not mutually exclusive, instead, they were intertwined. Thus in the presentations of the findings, the data will reflect the intertwined nature of the responses. The graphic design production activities were categorised into three namely pre-press, press and post-press. Nonetheless, there was an additional stage in the presentation that showed how graphic design products were handled after their primary usage, which was outside the domain of graphic design practices, however it reflected the design decisions effect of the graphic designers on the environment in instances where the

users had limited knowledge into the economic benefit of the used graphic design product. Table 5.3 gives a highlight of the stages observed.

Table 5.3: Graphic design production stages and areas observed (Author's construct, 2019)

The graphic design production stage	Areas observed
Pre-press	Clients interaction with graphic designers during design briefing and the actual designing of the graphic product
	Factors considered during designing
	Colour separation with an image-setter
	Platemaking and disposal of films
Press	Printing of the graphic design work with an offset printing machine
Post-press	Trimming, binding, lamination or ultra-violet coating

Each stage is a complete activity, thus there were four activities enshrined in the central graphic design practices from a sustainability perspective as shown in Figure 5.10, which also highlighted the fact that the activities were connected. The object for activity one became a tool for activity two, which was the same for all the other activities until the last one. This implies that any deficiency in any of the objects would affect the tool quality and well as the other subsequent objects

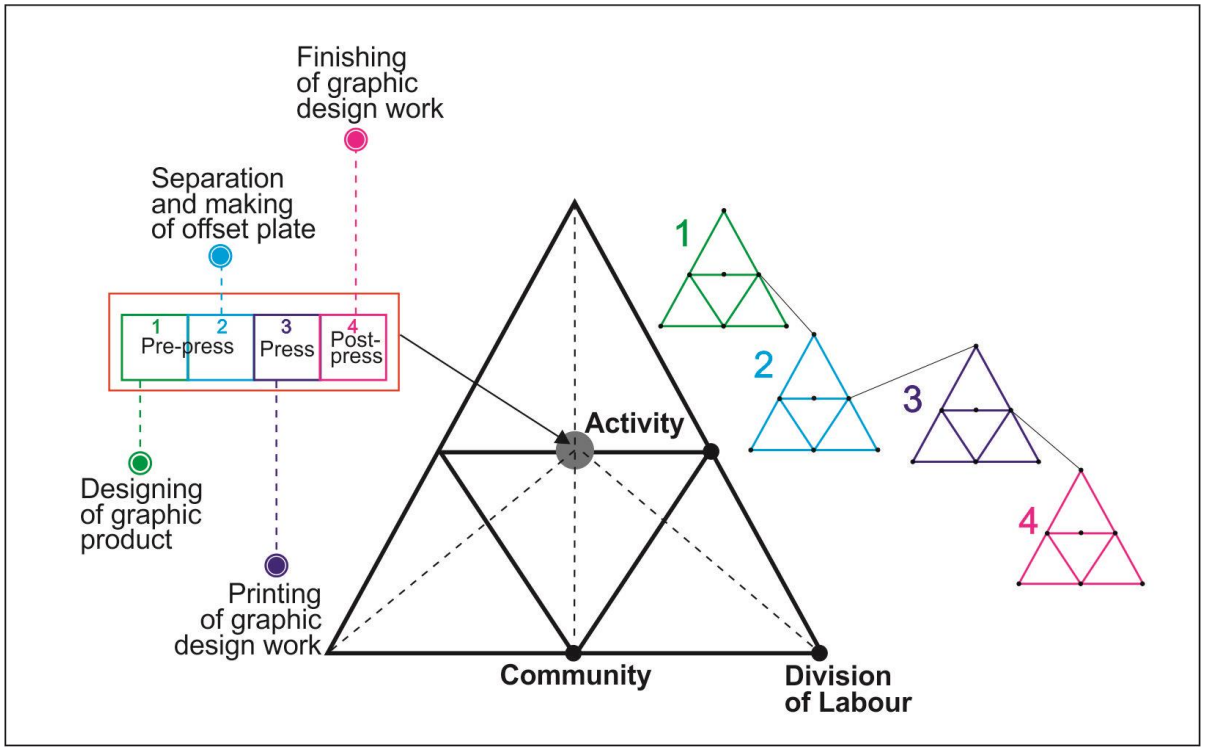

Figure 5.10: Various activities in graphic design practices captured in Activity Theory (Author's construct, 2019)

5.4.1 Pre-press: graphic designing stage

The findings under this stage are an accumulation of information form four different graphic design firms that were observed. The pre-press stage consists of at least three stages. The first stage is the design briefing, followed by the design of the graphic product and finally the printing of the work in a digital case or making of a film in the case printing from the press.

5.4.1.1 Creative brief or design specifications

It was observed that there were at least three ways the graphic designers received their creative or design brief from their clients, which were:

1. Face-to-face
2. Electronic mail
3. Social media platform such as WhatsApp

With the face-to-face meetings, the clients come to the design firm or studio, give a sample of the design to be made to the graphic designer and add extra directives or specifications on the work such as the quantity to be printed, the colour for the printing, the size of the paper the quality of the paper needed for the work and even the deadline for collection. The directives from the client are so important because should the designer forget, it will lead to disaster. The work could be done in the wrong size, a wrong colour which will lead to the rejection of the design work by the client. So what I observed was that while the directives were being given, the designer wrote them down, went over with the client to ensure that what he/she has written were correct. The design specification also known as the design brief was stuck on a whiteboard so that everyone working on the job was aware of those jobs specifications as shown in figure 5.11. In some other cases, the clients brought a complete work and required no additions but a redo of the work because the soft copy was either lost or damaged. In such a situation when the design is completed, the only task done on it is proofreading and not editing especially when the typing was done explicitly.

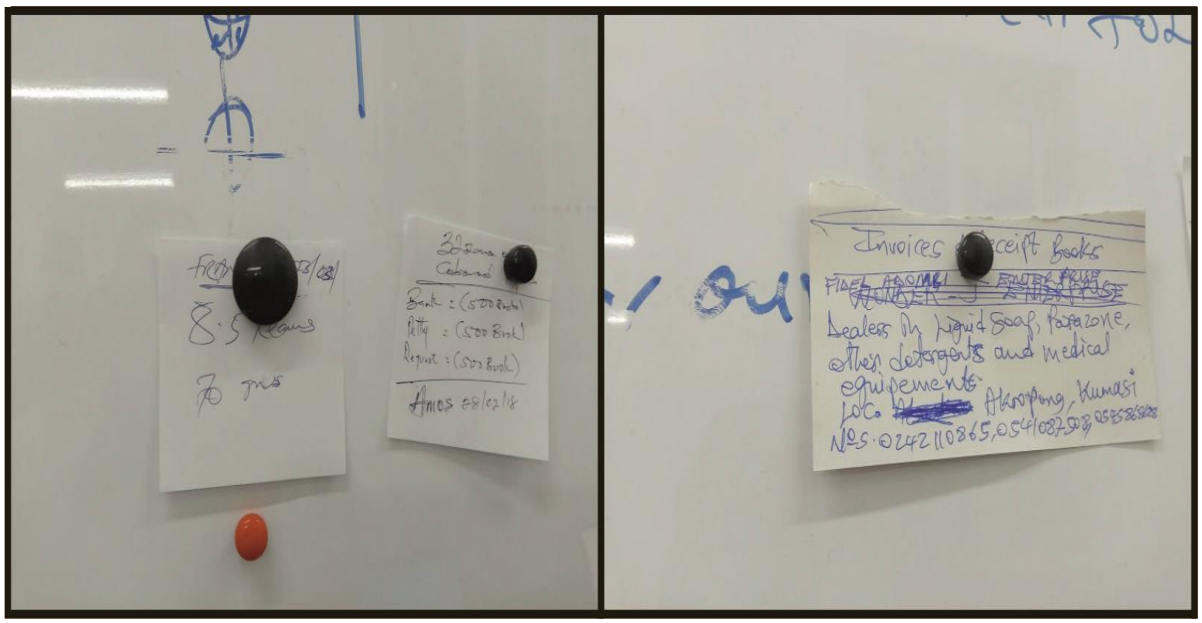

Figure 5.11: Design brief/specifications stuck on a whiteboard (Author's photograph, 2019)

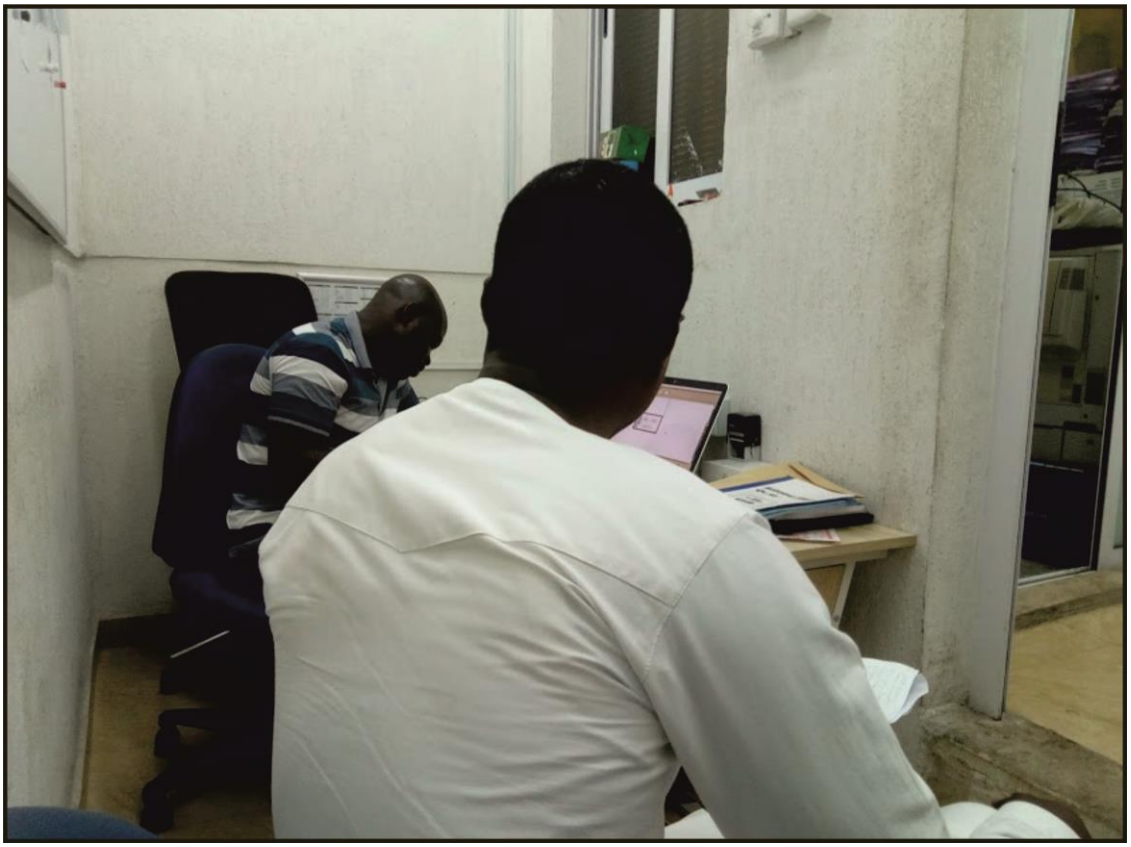

Figure 5.12: Client giving design specifications to a graphic designer
(Author's photograph, 2019)

In the case of using the electronic mail and WhatsApp as channels for giving design briefs to the graphic designers, the clients were mostly far away and coming to the design firm was challenging. They therefore resorted to sending the design brief via electronic mail to the

graphic designer who in turn uses the electronic mailed information for designing the graphic product. Figure 5.13 is an electronic mail containing a design brief for a graphic designer.

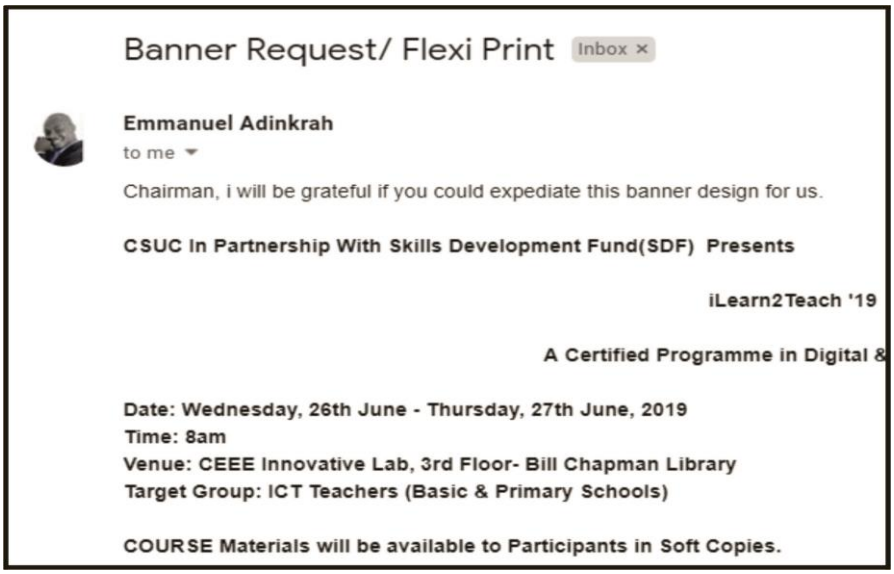

Figure 5.13: Design brief information sent via email to a graphic designer (Adinkrah, 2019)

5.4.1.2 Designing of the graphic product

After the designers received the brief, they used the brief as a guide in the design. However, I hardly saw a designer starting an entire design from scratch or from a sketch. Thus their brainstorming was done as they design the actual work. Instead what was witnessed was that they opened an old graphic designed work and edited the work from the text to the colours and new images were inserted to suit their new design brief's request. That made designing quite easy for them because they had their templates already. It also helped them to cut delivery time. As a matter of fact, that was the graphic design routine.

In the designing, extra factors that were considered by some designers were the social and environmental impact of the material or the informational content of the design as already discussed under the tools in section 5.2. Figure 5.6 also shows graphic designers at work. This gave us a fair idea of how they were immersed in their chosen vocation which invariably reveals and validate their passion as seen earlier in this chapter as a motivational facet. Some clients also sat by the graphic designers and gave their input as the graphic designers were carrying out their respective graphic design works. Some graphic designers though were not comfortable with that approach adopted by the clients, they could not complain because it helped them to cut delivery time.

During the designing, so many interactions go on which affect the output of the design. The interactions are relevant to sustainability. Therefore I will like to dive a bit deeper into the various interactions that go on among the graphic designers, their clients and the creative

directors. The first interaction to be discussed will be between the graphic designers and their clients. The graphic designers shared their experiences in working with their clients and colleague graphic designers. These were the comments they gave in relation to working with their clients that elucidate smooth interactions:

- *In co-designing with clients, they mostly come with samples and prefer I use it irrespective of the consequences but I always manage to convince them with my design by giving them two samples. One their preference and the other mine. They end up selecting my design after the two samples have been presented to them (Graphic designer 30).*
- *Designing with my clients has always been easy for me based on the fact that my designs meet my clients' choices (Graphic designer 29)*
- *I do not often get issues with the clients, we work together smoothly. I always ensure that we have adhered to their briefs. They are given samples for confirmation and then products are delivered to them on time. There are a few instances I have to explain to them a few printing challenges especially when the works need to be printed again (Graphic designer 24).*
- *I barely have problems with my client because I put their demands first in my priorities when designing, thus I mostly meet their demand (Graphic designer 19).*
- *I am not here because of myself. I am here because of the clients. So when the clients come I listen to them. I help them also to make the right choices. There was a man who gave work on drug labels. He came and told me to design a label for him using my own words. I advised him to get someone to write down the ingredients to help me the designer to work professionally. After which I informed him to go for a certification from Ghana Food and Drugs Authority and also from Environmental Protection Agencies. For instance, I have worked on labels that were sent for certification but it was rejected on several occasions because they check for legibility and readability of the font and the words to ensure that audience receive the best. (Graphic designer 7).*
- *Some of the clients just come up with their own ideas and prefer we work accordingly but change their mind and makes following these difficult because some clients do not know to want they want. Price is another factor that makes working with the client difficult (Graphic designer 13).*
- *I do not have any challenge because I follow the clients' directions or brief (graphic designer (Graphic designer 15).*
- *It easier to deal with corporate clients but when it comes to individual clients they are a bit difficult to deal with because they always want things done their way. Some even bring their samples and request for a similar design. What I do is when I receive the work I do as they requested and then do what I think can help. I then show them*

two works of which most at times my design is selected by the clients (Graphic designer 18).

On the contrary, other graphic designers expressed anguish for working with some clients they regard as difficult who make graphic designing look like a 'tug of war', which consequently does not allow them to express their professionalism. These are some of the comments the graphic designers shared:

- *Most clients bring their work sample and mostly want the design to be done their way irrespective of what you have created for them based on your professionalism. I do not succumb to clients' pressure because I want quality work done. So, I design based on the brief I have received from the clients (Graphic designer 15).*
- *When I design I send the designed work to the clients to check and confirm for the next stage to be taken in the production process. When a client brings a work late, we try our best to meet the deadline and in a bid to work faster we sometimes encounter typographical errors which affect the final work. Some of such works are even rejected… (Graphic designer 10).*
- *Sometimes I choose the colours and elements that I think can help but they push their preference even when it cannot help (Graphic designer 11).*
- *When working with the clients, what we have seen is that at times the clients' ideas are off and would not help to obtain a well-designed product that is communicative. Some clients want the elements to occupy every portion of the sheet but in the long run, since we have our imprint, we are careful. So sometimes, some clients jobs are refused because the kind of work they request for is far below are standard and since they are not ready to welcome our ideas we cannot help but refuse them (Graphic designer 1).*
- *Most clients are difficult in Kumasi. In Accra when work is given to the designer, the clients are given a time for collection but in Kumasi, they want to sit by your side to make their input which put pressure me and render me less effective. For instance, some of the clients want hot colours so when they do not see those colours they are not content with the work produced (Graphic designer 4).*
- *There is a culture in this environment which is that the clients want the designer to duplicate a design sample he/she brings and does not encourage creativity on the side of the designer. I think this attitude by the clients does not help the designers to unleash their potentials (Graphic designer 24).*

Client 1 argues that *"sitting by the designers to give their input is not done in a negative way but to help the designers to deliver the design work on time."* Client 4 also adds that

"irrespective of whatever the designers say it is their client right to tell the designers what they want in the design and to ensure that the output of the designed work is not far from what they desire." It, therefore, implies that the graphic designers need to creatively adapt to the client's preference but still find alternative means to expedite their creativity in order to compete with their competitors in the design business without losing their clients.

In the interaction space among the designers within and even across the graphic design firms, sharing ideas was a practice to better design or help check errors. These were the core experiences by way of summary that some graphic designed shared:

- *I share ideas with other people but I always ensure that I must understand what a colleague is saying about my work if, I do not I will ignore the advice because I will not be able to defend the work to a client. I mostly help my colleagues irrespective of what I am doing. I have that compassion to help….. (Graphic designer 5).*
- *We share ideas but it looks as of now I am the only true designer and I struggle a bit because I do not have anyone to shape ideas with. When there were other designers available if made possible working easier because we help each other (Graphic designer 7).*
- *I share my skills with my colleagues easily but some take offends. We have a WhatsApp platform where works are posted for people to share their ideas on the work and critique to help produce the quality design expected (Graphic designer 11).*
- *I do not have any challenge at all sharing my ideas. I just tell the co-designer my opinion about the designed work. Then we discuss it till we arrive at the right design solution (Graphic designer 12).*
- *I welcome ideas from my colleagues so I do not have any challenge in sharing ideas (Graphic designer 14).*
- *We share ideas but some colleagues at times fall in love with their designs to the extent that they do not want to adhere to other design opinions that are laudable (Graphic designer 9).*
- *I share ideas easily with my co-designer. He sees me as someone he wants to learn from. However, without shame, I have my strength and weakness in terms of design so I push works that my colleague is good at and can execute easily to him (Graphic designer 16).*
- *We have critiques that pass comments on the works we do. So at the end of the meeting, the work would have gone through a series of criticisms that will help to sharpen it to the standard expected. So, in this case, there are no challenges of sharing ideas because a culture of teamwork has been established to ensure that it is*

not about an individual's creativity but a team's creativity meant for the economic betterment of the graphic design firm (Graphic designer 15).

From these experiences, it is clear that there is a culture of ideas sharing that is done easily among graphic designers. However, there are few traces of graphic designers who 'fall in love' with their design work and find it difficult to receive constructive criticisms meant to help enhance their design work. Such designers need to shift into the mainstream culture for their own survival and relevance in the industrial space as far as teamwork is also concerned for the success of their firms.

The last to be discussed is the interactional space, which is between the graphic designers and their creative directors towards the enhancement of their graphic design works. Due to the position of the creative directors, they hardly had any challenge with the graphic designers when they gave their input because the designers succumbed and rendered the input of the creative directors. From my observation, the corrections or inputs given by the creative directors are implemented easily and in good spirit by the graphic designers. These were some of the comments shared by creative directors:

- *Working together by sharing ideas creates an atmosphere where everyone feels needed. We believe in the fact that no one is complete in terms of designing and that everyone's comment is necessary to ensure complete attainment of a designed piece. Therefore, we do not encourage bias ideas based a designers preference because we believe that at the end, the quality of the product produced is what is necessary and not the individual preference (Creative director 6).*
- *These are no challenges because since I control the entire production process I work with the designers and printing machine minders. I share my ideas with them and they also share their views after consensus is reached, decisions are taken (Creative director 2).*
- *I do not have any challenge sharing ideas with the graphic designers and printing machine minders. They adhere to my advice I give them due to my experience in designing and printing (Creative director 4).*
- *I share ideas with everyone especially when there are challenges to let everyone become aware of how to overcome such issues in the near future. They have also come to understand and know that I am more particular about quality which they all adhere to, making them trust my judgment in designs or critique of design (Creative director 1).*

On the contrary, some creative directors still had 'issues' with some of the graphic designers. Creative director 8 had this to share that *"some of the graphic designers feel they know so*

they are reluctant to adhere to my advice. But since it is my establishment I push them to do what I want as a creative director of the firm". This situation happens especially when the graphic designers feel they know more than the creative director because, from the comment of creative director 1, the designers adhered to his instructions because of his knowledge which is trusted by his graphic designers. It is, therefore, necessary that the creative directors who are not on top of their design issues should mount up to overcome such challenges.

5.4.1.3 Colour separation and digital printing

After the graphic design works were done having reached input from their clients, colleagues, and creative directors, the graphic design work was digitally printed and given to clients as samples for proofreading and editing in most cases. With others, the works were sent to the clients via email or by WhatsApp to check for errors and give feedback before the works were processed and separated under the guidance of the art director, onto films using an image-setter as captured in Figure 5.14 especially when the work was to be printed in large quantities.

Figure 5.14: Graphic designed work being separated into *process colours* and processed onto films with an image-setter (Author's photograph, 2019)

In a situation where few copies were needed or the designs were to be printed on a self - adhesive vinyl (SAV) or polyvinyl chloride (PVC) flex banner material, the designs were

printed digitally using a large format printer as shown in Figure 5.15. Moreover, some clients just requested a pdf copy or a jpeg copy, which they disseminated via social media, without printing the hardcopy, thus printing of some miscellaneous materials is gradually dying off.

Figure 5.15: Large format digital printer printing design on a self-adhesive vinyl (Author's photograph, 2019)

5.4.1.4 Plate making using the films

The next stage witnessed in the firms I visited was making of the *plate* which is done through transferring the image on the film onto an offset plate with the aid of a *plate burner.* From a step by step perspective, the film is first checked for registration (All full-colour works are separated into four films labelled as cyan, magenta, yellow and black which makes a complete work when printed as an overlay on one another). In checking for registration, the four films were overlaid on one another on a light-box to check whether they align on one another perfectly. After checking and confirming that there was no misalignment, the films were mounted on offset plates carefully and inserted into a plate burner to transfer the image from the film onto the plate through exposure to light within a given time as shown in Figure 5.16. After the exposure, the plate was first inserted into a developer to develop the images from the film after which it is washed and then a preservative is applied.

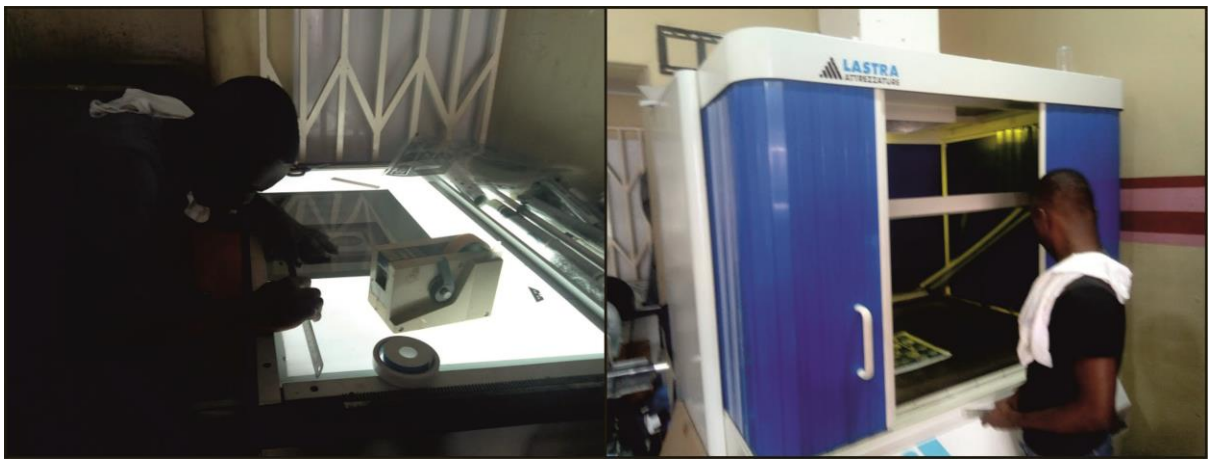

Figure 5.16: Offset plate being made (Author's photograph, 2019)

The plate making ends the process of the pre-press stages. The next to be discussed are the by-products which are relevant to sustainability because how they are disposed or managed have environmental, social and economic implications.

5.4.1.5 By-products from the pre-press stage

Under the pre-press stage, the by-products were mostly from the image-setter, the digital large format printing and the plate making. The by-products from the image-setter were the developer and fixer chemicals, which were poured away when they became weak. Fortunately, these chemicals were bought by the jewellers for processing their jewellery; repurposing the use of the chemicals and extending their usage before disposal. Unfortunately, the by-products from the plate making were rather disposed of into nearby gutters, which at times could not flow and bred mosquitoes because of the stagnation. Moreover, there could be a long run environmental implication for the disposal which has not been researched into to the best of my knowledge by the Environmental Protection Agencies in Ghana.

Another by-product was the trimmed excess pieces of the self-adhesive vinyl and the banner materials, which could not be put to any important use but were disposed of into landfills. The self-adhesive vinyl and the banners have rubber substances which makes it difficult for the material to deteriorate. The by-product within the plate making space was the films for one-time works such as the funeral posters, funeral brochures and calendars. These films are disposed but some offset printing machine minders were able to use some of the films for cushioning their offset printing machines blanket for a smooth impression when the blankets became weak. This implies that other offset printing machine minders need to consider this possibility in order to reduce the disposal of the used films.

5.4.2 Press: print production stage

After the plates were made, they were handed over to the offset printing machine minders. Papers were cut for them. They, in turn, inserted them in the printing machine and started printing using the right plate and the right colours. In the printing process, chemicals were used along with the printing inks for smooth printing. Some of this chemical was not approved but due to financial challenges, some machine minders were using petrol and kerosene for washing their blankets. These were harmful to the health of the machine minders and their apprentices. The offset printing machine minders also worked closely with the creative directors. The creative directors shared their experiences with the printers which were quite interesting and burdensome in some instances. These were some of the experiences:

- *I always check all my colours before the printing machine minders start printing. With my knowledge in painting, I can detect what the end result will be so I always make sure the colours are printed in the right order. When printing is being done, I monitor and even stop printers until I am assured that the end work will be the expected. I am not particular though about eco-friendliness of ink, I always ensure that the right inks are used (Creative director 3).*
- *….The printing machine minders actually become used to your ways of doing things thus helping in attaining the requisite quality needed by the clients (Creative director 6).*
- *…. A sample is printed first since our offset machine can print all the four process colours at a go. I check with the design and screen to peruse the printed copy well. If everything is alright, I ask them to go ahead to print the needed copies. (Creative director 12).*
- *The printing machine minders are given a sample of the work to be printed as a guide. The printing machine minders commence the printing and give me a sample after printing each colour until the entire work is printed. But in my absence what I have realized is that when the graphic designers are done they do not follow up (Creative director 11).*
- *The challenges I encounter is more related to printing machine minders with fewer skills as a result of poor apprenticeship approach used for training the printing operators. This mostly happens because the printing machine minders lack education on trending issues as far as printing is concerned. I am not always satisfied with what I get after the graphic design work is done. Especially when the printing machine stops they do not check the printing faults, they just continue printing ignoring the fault. In fact, most of the printing machine minders just run the machine with no eye for quality. One even asked me one day when I saw a bad printed work done for me that what I have is even better or it was ok that was how far*

or how best they could print. They just do not read, learn about their jobs, they just continue with their antiquated approach to printing which really even affect the patronage of their services. No wonder, most clients now do not print their works from Ghana anymore due to some of these challenges. Most of the presses are also old affecting the quality of the graphic design works printed (Creative director 15).

The experiences shared by most of the creative directors refer to the fact that the offset printing machine minders need supervision to produce quality output. In the case of creative director 15, it is apparent that the work was done by the machine minders without any supervision hence the outcome received. What I also realised was that the press owners were not ready to employ the professional offset printing machine minders because of the high remuneration they request. The other unfortunate situation was that their offset printing machines too were old but that was what they could afford, implying that they will have challenges regarding print quality which could affect their print outcome.

Surprisingly, the same offset ink types as captured under tools were used for all printing purposes, be it books, packages and labels. Some of the offset inks according to creative director 4 even contain a percentage of acid; hence using it for printing on materials for edible products too was risky because some products such as pastries get in contact with the inks during packaging, which can be poisonous for the human body when consumed. After the works were printed they were handed over to the post-press workers for them to finish up with the graphic design products. The products that were printed under my observation were mostly textbooks, corporate brochures, flyers, magazines, files, calendars, labels and packages.

Figure 5.17: An offset printing machine minder about to clean a blanket with printing test sheets next to it (Author's photograph, 2019)

5.4.2.1 By-products from the press stage

The by-products from the press stage were disposed of used clothing that was used together with the plate cleaners and petrol for cleaning the offset printing machines and cylinder during the printing and after the printing. The other by-product was spoilt printed sheets during the printing resulting from test prints, machine error or poor registration from unskilled offset printing machine minders and offset printing ink residue.

5.4.3 Post-press: finishing and delivery

The post-production stage is the final stage of the graphic design practices observed. At this stage, every consideration and choice made by the graphic designers manifested or came to fruition based on the output of the graphic design product. The activities that went on at this stage were trimmings and cutting of the printed jobs and delivery of finished works like flyers and three-fold brochures to clients. Other works needed extra work to be done on them. For instance, some works were collated, stitched or perfect bonded using a perfect binding machine. Some were ultraviolet coated while others were laminated and trimmed afterwards. The finishing depends mostly on the purpose of the graphic design product.

The by-products from the post-press were mostly trimmed papers and paper wrappers. The trimmed papers were in two forms; offcuts and strip-like trimmed papers. The strip-like trimmed papers were bought by egg crates makers and recycled for making egg crates, while other people bought them for making toilet rolls based on an informal conversation with some members of the paper converters association as depicted in Figure 5.18.

Figure 5.18: Strip-like trimmed papers being carried away for various purposes
(Author's photograph, 2019)

Figure 5.19: Offcuts (Author's photograph, 2019)

The off-cuts were bought or used for other small-sized works such as receipts and invoices. The paper wrappers (wrappers that cover the sheets of papers that are used for printing) were reused for wrapping clients graphic design products as shown in Figure 5.20

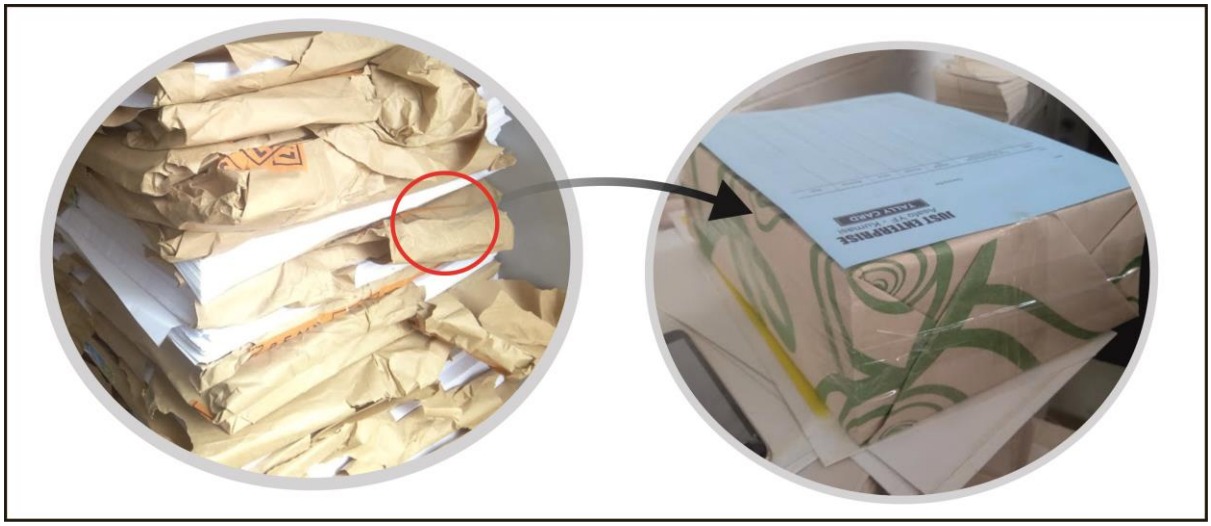

Figure 5.20: Printing sheets wrapper used for wrapping graphic design product (Author's photograph, 2019)

5.4.4 Tensions in the activity

In short, the *activity* unit in the graphic design production consisted of graphic designers, the creative directors, clients, offset machine miners and finishing officers. The activity thus integrated the *division of labour and community unit* because it was difficult to separate them due to the overlapping and integrated roles played by the various actors in the community towards the creation of the graphic design product. Each person played an important role in

the production of a graphic design product. There were some bottlenecks or tensions that affected the smooth running of some of the activities, which needs attention. Though the tensions will be discussed and analysed in the next chapter it is worthwhile to put them in the limelight. The tensions in the activity that resulted in unwanted outcomes were human error, lack of skills, poor communication, inconsistency in electricity supply and obsolete tools. These were the various comments given by the creative directors that reflect the various tensions mentioned:

- *The challenges mostly come from the image-setter error, lack of professionalism in printing and typographical errors. In the case of the image-setter error, the errors are seen mostly when the printing is being done implying that there could have been already printed colours which will all go wait (Creative director 1).*
- *Typography errors showing up in the production process actually affect the viability of the industry. For instance at times after printing about five hundred booklets you will only be made aware that a word was wrongly spelt on the cover of the booklet. In this case, all the covers need to be removed and reprinted to meet the client's expectation. One of the problems especially happens at the typesetting and the layout stage. Most clients do not read or proofread the document resulting in errors in the final production (Creative director 6)*
- *When the communication to the printers, paper cutters machine minders is not well done, it creates a lot of challenges because the works at times are printed wrongly, paper sizes are cut wrongly resulting in job rejections by clients (Creative director 4).*
- *Most of the printing machine minders have challenges in using colour calibrator bars so what they engage in is optical checking which at times fail and result in wrong colour printing…. (Creative director 12)*
- *Printing machines are obsolete and need to be changed. Printing machine minders do not understand most of the information on and around the artwork that is meant for guiding the printing machine minders to print the work in a professional way (Creative director 11).*
- *It is more related to machine registrations issues and limited skills of the printing machine minders (Creative director 2).*
- *Electricity light fluctuations are a major hurdle for us since most of our presses depend on the national grid. Anytime the supply of electricity fluctuates or cuts the printing stops, the image-setter stops, nothing is actually done. I have to start all over again, which affects the cost of production due to the extra usage of materials (Creative director 15).*

All these tensions in one way or the other become challenges to sustainability in graphic design practices from a sustainability perspective but are not from the usual recognised narrow form of conventional or traditional sustainability which is environmentally-oriented. The next to be tackled in the findings is the *object* unit from an Activity Theory perspective.

5.5 Object: graphic design products

The *object* unit in the Activity Theory in the context of this research refers to the physical graphic design product produced from the activity space. The question which was used for the data gathering on the object was:

What is the nature of the communications content and the graphic designed products produced by graphic designers?

In trying to mine data to provide an answer to the question under this unit, thirty graphic design products were selected from the graphic design firms visited. They consisted of flyers, posters, brochures, books, packages and labels. The findings were interesting and also validated the findings under section 5.2.2.1, which throws light on good layout and colour combinations, the communicative ability of text and images, design aesthetics and quality finishing as the content and physical quality of the graphic design product. The colour combinations were pleasing to the eyes, texts were clear and readable but there were few that had typographical errors. Some of the images were not very sharp because they were copied from the internet; they communicated clearly and reflected the text they were augmenting. Figure 5.8 are some of the graphic designs selected which reflect the qualities shared so far on the graphic design products.

The next section of the product assessment focused on the quality of the graphic design product and its influence on the viability of the graphic design practices sustainability point of view. This section implies that one of the determinant factors of sustainable graphic design practices is the output of graphic design practices. These were the comments given in support of the statement:

- *My design always attracts people making my design a major factor for financial viability (Graphic designer 3).*
- *The business is viable especially when your designs are nice. For instance, my design keeps my clients because some even after travelling afar even still contact me for my design service only (Graphic designer 5).*
- *We want to grow a clientele based on the quality of graphic design product. People want good stuff or quality stuff but people do not want to pay for it. I run a system where the design becomes centre stage and then charge for design. I charge for design because what was brought was a mere idea but through creativity, something*

has been created out of it. I believe that when design becomes the centre stage but equally functional will helps to sustain the business or makes graphic design practices viable (Graphic designer 8).

- *The printing is viable because we are able to receive more work as a result of the quality design, material and print out (Graphic designer 9).*
- *My designs and the quality of my print out serve as the two major factors that serve as the foundation for the viability of my graphic design practices (Graphic designer 14).*

From these comments, it is apparent that aesthetically pleasing design and quality printing have high potentials for serving as major pillars for the economic viability of the graphic design profession or practices from a sustainability perspective.

5.6 Outcome: the effects of graphic design practices on the environment, society and the economy

The outcomes of the graphic design practices were a result of the design considerations factored during the graphic designing and the production planning or designing for the graphic product from Activity Theory perspective have four consequences which are:

1. Physical benefits from the graphic design products in the societal and economic contexts.
2. By-product effects from the graphic design practices from a sustainability perspective on the society, environment and economy.
3. Experience acquisition among the *community* of actors through engagement in graphic design practices.
4. The after use consequences from the graphic design products.

The physical benefits from the graphic design products were enormous based on the purpose of the product. For instance, invitation cards made were to invite people to an occasion and it served its purpose of the invitation. The books also served their purposes as learning materials for education. In fact, every work I observed was able to meet the purpose for which they were meant for. In the economic context, good design, maximization of materials used in production and quality estimation were the facets for the viability of the graphic design practices which kept alive the graphic design firms as business entities. These were some of the general comments given by some creative directors:

- *It is financially viable. Some people just look at the work and give you the wrong quotation. This was not officially part of a graphic designer's job but graphic designers are now engaged in estimation because their designs also have an influence on the estimate. For instance, the size of a work can be changed to reduce financial cost implications or colours can be reduced to affect the cost implication so*

it is critical that graphic designers now even learn it in school and not just manipulation of text and images for communication looking at their design decisions affect from economic, social and environmental stands. It is financially viable. In fact, what I have recognized is that presses in Kumasi and to be more precise Asafo, they do not collapse as far as the owner lives. It keeps on running (Creative director 2).

- *The graphic design industry is viable but depends on your bargaining skills in the sense that the materials you use cost can be negotiated especially when you are producing a large number of products or graphic design work. All things being equal if there is no design fault, printing challenges or finishing challenges then I can say you will break even and make a profit because we mostly double the production cost. So if a finished books production cost is $50 it is multiplied by three making it $150. The essence is that, should there be any error the $50 can still be used for reprinting without it affecting your profit margin. If everything also goes well you will actually make a profit margin of 200%. This though is not always the situation and therefore the profit margin also factors the possibility of the works being rejected due to the client's preferences in order not to lose (Creative director 4).*

The next outcome is the by-products effects from the graphic design practices on the society, environment and the economy. The by-products from the graphic design practices on society were more related to health implications. The petrol used for cleaning the blankets of the offset presses had a strong scent. The digital large format printers also had a strong scent from the eco-solvent inks, which makes breathing uncomfortable. On the environmental angle, there were three major environmental issues, which were the disposal of printing ink residue in gutters which lead to streams, burning off some of the waste from the press containing ink residue and petrol and usage of tap water for washing dumber from the offset machines. Economically, some of the by-products such as the trimmed papers did not become waste because they were bought and use as raw materials for producing papers such as newsprint and strawboards. Others were converted into egg crates and toilet rolls.

On the front of experience acquisition, most graphic designers' creativity was enhanced day after day as they tried to solve different challenges. Some graphic designers also learnt new design applications day after day which also enhanced their design applications skills. Others also have learnt how to learn on their own using online resources and apply what they learn in their designs. Some graphic designers have learnt managerial skills in maximising the use of papers for design production. Another area is the paper qualities and their purposes, which have become a feather in their skills-cup of the graphic designers. On top of all the acquisitions were their abilities to apply the gained problem-solving skills through creativity to other non-design oriented situations.

5.7 Development: disruptive innovations in the graphic design practice space

Due to the dynamism of the graphic design community, there were technological innovations that were changing the landscape of graphic design practices. These developments sprouting in the graphic design space had two sides. One side was disruptions to the economic viability of the graphic design practices while the other was fulfilling the agenda of environmental concerns. For instance, the advent of social-mediated communications had affected the production of invitation cards and other publications. The magazines, brochures and learning materials that are designed and printed have been disrupted by technological advancement to the extent that industries and firms have resorted to these technological tools for their communications and interactions limiting the physical prints they were subscribing to. Others have open-source design applications that everyone can use to design their own works. Consequently, these applications have replaced the graphic designers, thus the services of the graphic designers were less needed giving way for a new era of "machine" designers. These comments reflect the threats the technological advancement poses to the graphic design profession:

- *The advent of electronic media has threatened the publishing of books. Currently, when you get to Asafo most press houses and design studios are inactive due to the advent of social media and digital platforms. For instance, most institutes have gone paperless which has affected the industry drastically. Though it helps environmentally, it is strangling the graphic design industry from a publishing perspective. Even now at most functions, PDFs are sent via WhatsApp, in other words, the brochure for the function are not printed which helps to solve both economic and environmental challenges. However, from a long term perspective, it renders the graphic design industry as far as physical production is concerned out of a job which affects the social life of the designers and their dependents. The advent of open-source design applications also has threatened the need for qualified designers in handling communication issues as far as design is concerned. The current situation is rendering graphic designers and pressmen out of business (Graphic designer 18).*
- *The digital presses have replaced the old or the traditional press. Now, most people or clients use WhatsApp to disseminate their information so when the design is done they are given to the clients without being printed. WhatsApp and other social media channels are used which affects the publishing or the design industry economically because we do not charge much for designing in our part of the world or to be more precise in Kumasi due to the type of clients we have here (Graphic designer 21).*
- *Social media has become the current trend so people prefer that because it is cheap when it comes to dissemination of information. A lot of people are now using software*

that has made their systems paperless. People use more of e-books. All these technologies have affected the industries. We need to combine both the conventional and digitized systems to make the industry survive the current wave or storm from technology (Graphic designer 16).

- *The New Media technologies are threats because currently what is trending is that when works are designed the clients prefer to have it via social media to share with colleagues to discuss them bring feedback for correction. Unfortunately, at the end of the day, they do not print but dissemination it via these social media platform and pay virtually a peanut for the design work (Graphic designer 14).*

The other side of the coin promotes environmental sustainability creating a cleaner environment due to paperless technological systems. In support of this side of the coin, other graphic designers were optimistic and believe it's a current wave that graphic designers should use their creative skills to overcome and should recognise the technological advancement as a challenge with tentacles they can overcome. The essence is that graphic designers do not have an option in this current situation and should act quickly to stay salient in service provision in communication design or relax and get ejected forever. Some comments expressed by some graphic designers were:

- *Technology is helping to advance our business now, I use Bluetooth to receive pictures and word files from clients making my work more convenient. Also, I am able to send WhatsApp files to clients for a poster or invitations disseminations. Some people like WhatsApp sending flyers to loved ones and colleagues so we designers need to adjust to the new rhythm (Graphic designer 4).*
- *I do not think with the design industry there is something that can threaten the economic sustainability of the design industry. For instance, the new large format printers are gradually making the old traditional press obsolete as well as digital or social media platforms coupled with computerized systems for administrations that eradicate the use of paper creating the well-known paradigm of paperless administration system to check de-afforestation that goes a long way to affect our climate system. Designers' inability to integrate other areas of graphic design production in their plan affects the end product and threatens even the economic sustainability of the profession (Graphic Designer 16).*

The comments from these two sides signify that the technological advancement in the space of graphic design is disrupting the practices of graphic designers who are traditionally oriented. Such traditionally- oriented graphic designers need to quickly match up by repositioning themselves by learning how to apply the old skills in the new space to stay relevant.

5.8 Summary

This chapter presented the findings on an exploration of the graphic design practices from a sustainability perspective. It discussed various activities graphic designers and their supporting team engaged in during the graphic design production at Asafo a suburb of Kumasi in Ghana. The presentation rested on the pillars of Activity Theory. The essence of this chapter was to bring out every facet of the graphic design practices which will help us solve the key question: *What are the challenges to sustainability in the graphic design practices of a developing nation?* The key findings in this chapter based on Activity Theory were:

From the *subject* perspective, the graphic designers engaged in graphic design practices based on the motivations and educations they receive, which also determined how they carried out their design activities. The facets of the motivations were passion-driven, client-satisfaction-driven, publicity-driven, and economically-driven. On the front of education, the mode and content of their education were also major determinants of the quality of design they produced. The mode of education enveloped online learning, peer learning via social media, on-the-job learning while that of the content was driven by graphic designing trends, graphic design application usage and graphic design house-style orientation. The findings and motivations did not project into sustainability awareness but the graphic designers were aware, which were apparently based personal concerns for the environment and society.

The next unit was the *tools.* The tools consisted of physical materials and skills and knowledge for graphic design. The skills and knowledge were considered as intangible but consisted of graphic designing and design application usage skill, factors for selection of the materials and tools and factors considered in the selection of production plan. The design skills and knowledge focused on good layout and colour combinations, communicative abilities of text and design aesthetics with quality finishing. The selection of materials and tools were also governed by the purpose of design, clients' preferences, cost and quality of materials and graphic design firm's standards. In the case of the physical tools and materials, they are captured in table 5.0.

In the *rule* unit, the facets that were discovered were personal ethics, institutional standards which consisted of Food and Drugs Authority guidelines and Environmental Protection Agency standards. These institutional guidelines are to help ensure sanity and standards of designs for the society's safety by ensuring that the content of the graphic design product is regulated, which was the case on the ground in most cases.

The next unit was combined and consisted of *activity, community and division of labour* units. The interactions among the units happened within three spaces, which were pre-press, press and post-press. The prepress consisted of:

1. Clients interaction with graphic designers during design briefing and the actual designing of the graphic product
2. Factors considered during designing
3. Colour separation with an image-setter
4. Platemaking and disposal of films

The press was also made of printing of the graphic design work with an offset printing machine while the post-press handled issues of trimming, binding, lamination or ultra-violet coating. The major waste materials form this section were spoilt printed sheets from test prints, machine error or poor and offset printing ink residue. Under the post-press, the waste were offcuts and trimmed papers which were bought for egg crates, toilet rolls and recycled papers.

In the space of the *object* unit, the graphic design products were aesthetically pleasing designs with quality printings having high potentials for the economic viability of the graphic design profession. The *outcome* unit was in five-fold. The first was on physical benefits from the graphic design products in the societal and economic contexts, followed by the by-product effects from the graphic design practices from a sustainability perspective on the society, environment and economy. It also enveloped the experience acquisition among the community of actors through engagement in graphic design practices. The after use consequences from the graphic design products was also captured under this unit. The last bit encapsulate the developments in the units which centred on disruptive technological innovations to the graphic design profession posing challenges to traditionally oriented graphic designers and gradually pushing them out of business. However, there were expansive circles around the disruptive technological advances such as design firms using social media and open-source design applications for the dissemination of graphic design products that helped most graphic design firms to stay relevant in the design industry.

CHAPTER SIX
DISCUSSION OF FINDINGS

6.0 Introduction

The focus of Chapter 5 of this thesis was the presentation of findings, gathered through the utilisation of ethnographic tools based on the interpretivist research paradigm using the research question:

> *How are graphic design practices carried out in a developing nation from a sustainability perspective?*

Since interpretivism stands on the pillars of relativism ontology and subjectivism epistemology (Dieronitou, 2014:7), generalising the findings regarding the graphic designers' practices was not part of the focus of this research. It was because, from the subjectivist position, truth in the context of experiences manifests in multiple realities based on social context (Bagele & Kawulich, 2012:10). This implies that generalising the research findings could have led to invalidity issues. Instead, the graphic designers' individual experiences were all factored, themed, categorised and dialectically interpreted. The presentations were done with the aid of Activity Theory and the Sustainability Development Analytical Grid.

This Chapter is a direct continuation of Chapter 5. It discusses the findings in Chapter 5 from sustainability and Activity Theory perspectives vis-a-vis the literature. The discussions cover all the various units (subject, rule, tools, division of labour, community, activity, object and outcome) from an Activity Theory perspective. The Chapter further explores the interactions or the interplay of the various units within the graphic design practices and maps out tensions through the lens of Sustainability Development Analytical Grid. It also advances the concept of cosmopolitan localism, which is considered as an expansive circle that helps to navigates some of the tensions in the findings. The remaining challenges that the expansive circles do not cover are tackled in Chapter 7 through a participatory design workshop that explores innovative local ways for practising sustainability in graphic design.

6.1 Subject: the driving force behind the graphic designers' practices

In other to unveil the mind-set of the graphic designers the sub-question used was:

> *Why do graphic designers engage in graphic design practices?*

The essence of revealing the mind-set of the graphic designers was because the graphic designers are central in the graphic design practices and their perspective governs how they approach their practices, which also affects the graphic design outcome. The findings revealed the mind-set of graphic designers in graphic design practices, as shown in Figure 6.0. The findings regarding the mind-set were more associated with values as framed by

Benson and Napier (2012:197), and had two major components. These were motivations and education. Based on the findings the following drivers or motivators were identified: passion, client-satisfaction, publicity and profit. On the side of education, the motivators consisted of the graphic design firm's house-style, graphic design application usage and graphic design trends. From the findings, there is a correlation between motivations and the education components, because the motivations are shaped by the kinds of education the graphic designers submit themselves to. For instance, in the arena of motivations, no traces of sustainability dimensions were found, which is also confirmed by the educational content they studied either online, on-the-job training or peer learning via social media. The lack of education is in line with the findings of Dritz (2014:40), who discovered that graphic designers lack sustainability education and due to that there are no properly defined parameters of sustainability from an industrial perspective, which will make sustainability education even more difficult.

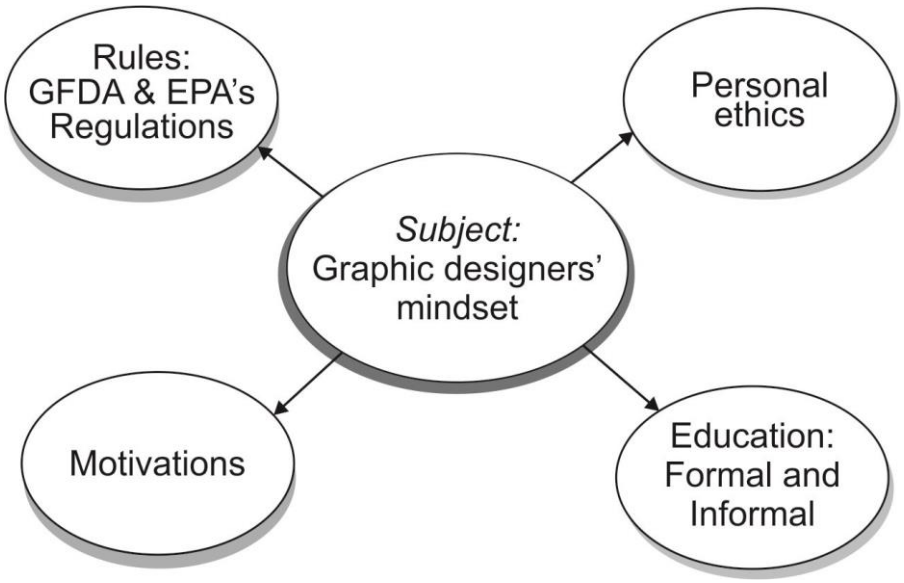

Figure 6.0: The trajectories of the mind-set of graphic designers at Asafo, Ghana (Author's construct, 2019)

These forms of educational spaces available to the graphic designers for upgrade in their graphic design practices were not captured in the literature reviewed directly, instead they can be likened to technological affordances which are leveraged for upgrade in a fast-paced changing design world that influences what graphic designers create and how they create them (Sandhaus, 2013:405). These educational spaces also did not show any traces of sustainability but showed the graphic designers' personal motivations like the desire for learning new graphic designing trends. The findings regarding the motivations are also justified by Benson and Napier (2012:207) who purported that:

> *Four years of further experiments in teaching sustainability to communication designers have led to findings showing that Millennial designers have a surface-level knowledge of sustainability [but] are passionate about their own personal social causes, and as such, as long as they had a good portfolio and a stable but exciting job after graduation, learning about sustainability was not necessarily essential to them…. These ideas were the core goals that seem to motivate the majority of the current generation of communication designers.*

Additional findings from this research give a contradictory practical experience regarding sustainability (social or environmental or profit consciousness) education as purported by Benson and Napier (2012:207). Though no traces regarding sustainability education was found, somehow, sustainability was factored in some graphic design firms and was justified as a responsibility needing no education for implementation. The reason was that the factors to consider were ethically oriented as perceived by some graphic designers which is also advanced by Mietkiewicz (2016:12) as one of the *Golden Rules*, which says that "do not do to others what you would not like done to yourself". Mietkiewicz (2016:12) adds that ethics in graphic design is essential in commercial graphic design projects to ensure that customers and audience are not exploited. Contrary to what Mietkiewicz (2016:12) advances, authors like Shaughnessy (2005:13) argues that the graphic design field is competitive and because of that graphic designers who reject works based on ethics are likely to lose their jobs to their competitors. McCollam (2014:320) also supports that designing driven by ethics only, is neither practical nor possible in the contemporary design world. But contrary to what Shaughnessy (2005:13) and McCollam (2014:320) advance, the findings from the mind-set of the graphic designers in this research showed that practising ethics in graphic design is possible in the field because some graphic designers have engaged in ethical designing, which has not impacted negatively on their work or their relationship with their clients. Additionally, from the *rules'* unit in the Activity Theory, there were governmental regulatory bodies that also censored major graphic design products in the designing process, which reflected a sense of sustainable responsibility. It, therefore, implies that sustainability is somehow present in some graphic designers' practices though it is not in the formal education they receive.

From an Activity Theory perspective, based on this research, the graphic designers' mind-set controls the central activity through integration with a *community of actors* and the *rule* unit which influences to some extent the outcome of the graphic design product. When the graphic designers' mind-set is also viewed through the lens of Sustainability Development Analytical Grid, there is a lack of sustainability education. However, the context within which some of the graphic designers worked ensured or enforced a form of social and

environmental responsibility due to the availability of the Ghana Food and Drugs Authority as well as the Environmental Protection Agency and the graphic designers' personal ethics. Yet, sustainability education is needed for the graphic designers to better understand the need for them to advance the cause of sustainability as far as their practices impact in the ecology of sustainability is concerned in a developing nation's context.

6.2 Mediating tools used in graphic design practices and their implications in the context of Activity Theory and sustainability

To set the tone for discussing the *tools,* there is a need for a quick flashback. The question used for gathering the data on the tools and materials used for graphic design practices was:

> *What physical materials, objects, knowledge and skills do the graphic designers depend on to achieve the purpose of their activities?*

The findings on the *tools* unit encompass not only the physical materials and tools (external or tangible) but also the skills and knowledge (internal or intangible) used in handling the tools and materials in producing the requisite graphic design products as captured under Chapter 5 section 5.2. Thus an understanding of tools goes beyond the mere nature of the tools and materials to the interactions of the tools and materials with the other units in the context of graphic design practices.

The tangible aspects of the *tools* consisted of the physical tools and materials used, which ranged from paper through plastic, metal substances to complex equipment. The paper 'by-products' and used offset plates from the graphic design production mostly were either reused or converted into other products with little disposal rate onto landfills. The situations connote that there was minimised waste and environmental effect as a result of the various creative and beneficial approaches for handling the by-products.

From a sustainability perspective, the results, therefore, support the ideology of Cradle-to-Cradle but contradict the statement by Dougherty (2008:8) that graphic design is jam-packed with waste, because the waste is not actually waste. Rather 'waste' is used as an industrial raw material that deters the industries from depending on natural resources that could cause environmental degradation. In terms of eco-friendliness of the materials, all but some of the chemicals for the graphic design production processes had deficits and need to be reconsidered, as stressed by Dougherty (2008:10). The challenge was based on the fact that the graphic designers depended on the only available materials on the market. This limited their choices, should they have requested any type of eco-friendly materials. It became clear that the graphic designers were unaware of the need to select environmentally- responsible chemicals. Some chemicals like the petrol and kerosene used for washing the offset printing machines were very harmful to the health of the machine minders but that was what they

could afford in order to ensure that their presses were always running, even at the expense of their health. This is an extremely relevant yet disturbing finding. The question is what has sustainable graphic design practices got to with these health implications? In sustainable graphic design, everything that happens from the design to delivery is engineered by the graphic designers or creative directors, mostly based on the intangible tools they adopt. As a whole, on the platform of sustainability, the tools and materials had minimised negative environmental impact and few societal health implications.

The next area for discussion is the intangible tools. The intangible tools are central to the selection and usage of tangible tools. Any deficiency in the intangible tools could affect the graphic design product as observed in this research. Intangible tools employed by the graphic designers were graphic design and design application skills, skills for selection of tools and materials and skills for production planning. The details of these skills have been elaborated in Chapter 5 section 5.2.2. Further to this, the graphic designers had full control of the intangible tools, thus the practices meet the criterion of quality goods and services under the economic domain of the Sustainability Analytical Grid, which emanated from the graphic designers' ability to meet the education criterion in the societal domain discussed under the *subject* in this chapter. In the space of the society, these skills were controlled externally by the Ghana Food and Drugs authority especially in the domain of package and label designs for the safety of the society, while the Ghana Environmental Protection Agency checked the environmental impact of the materials used for the graphic design products. The external regulatory bodies played an additional role in controlling the application of the intangible tools because the designers were operating from open-ended but ethical perspectives that could have led them astray regarding requirements such as specific colour choices.

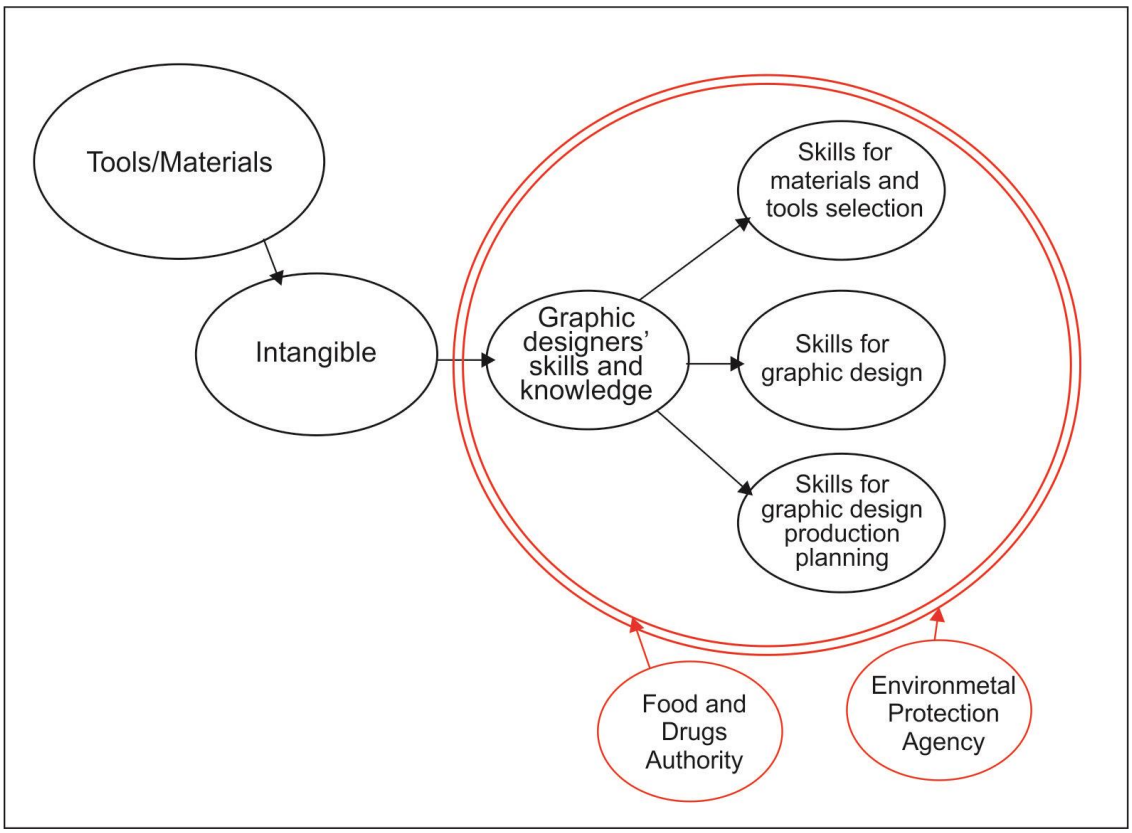

Figure 6.1: The control of graphic designers' skills by the FDA and EPA (Author's construct, 2019)

The findings were quite different from those of other nations. For instance in Canada, the Society of Graphic designers of Canada is in full control in ensuring that graphic designers practice sustainability by guiding them with a code of conduct (Society of Graphic Designers of Canada 2018) as it is also done by the American Institute of Graphic Arts (AIGA 2010). The situation in Ghana is that the Government takes key responsibility for sustainability with the backing of legal frameworks to ensure that environmental and social responsibilities are adhered to. The former (Canada and America) strictly depend on ethics but the situation in Ghana as a developing country, reliance on ethics only might not work efficiently because of constraints such as the desire for profit and the lack of sustainability knowledge. Hence the need for the government's provision of agencies to enforce the right practices is the appropriate step and must not be compromised.

6.3 The rules implications on graphic designers' practices in the context of Activity Theory and sustainability

In exploring the rules that were employed by the graphic designers, the question used was:

What norms or conventions do graphic designers adhere to in their graphic design activities?

It was discovered that the trajectories of the rules used in the graphic design practices were personal ethics and institutional standards which consist of graphic design firms' standards,

Food and Drugs Authority guidelines and Environmental Protection Agency standards. The design principles though a rule, are captured under the skills in the tools so the discussions on the rule will not cover it. Though some aspects of the rule unit have been featured in the previously discussed units due to the rule's interlacing nature in the whole activity, that discussion used the rule as auxiliary and not the central unit. This sub-section, therefore, focuses solely on the rule unit and how it interlaces in the graphic design activity.

The findings on the practice of personal ethics by some graphic designers regarding the environment and societal concerns indicated a step in the right direction. However, personal ethics struggled to thrive in firms with in-house graphic design standards. The reason was power control was wielded mostly from creative directors' side who ensured that their graphic designers conformed to their in-house policies, which contradicted some environmental and societal interests, such as the use of petrol and kerosene for cleaning printing machine inks which had detrimental health and environmental implications. It is, therefore, apparent that some graphic designers' personal ethics were influenced by the graphic design firms' in-house policies that the graphic designers had to adhere to but that was not for all the graphic firms visited.

The Institutional standards consisted of the graphic design firm's policies (internal regulations) and association or governmental regulatory policies. Most graphic design in-house policies were geared towards economic viability with little concern or no for the environment and the society. The findings reflect the research findings by Makower (2015: ii) stating that companies struggle to break the link between their economic growth and environmental decay. The implication is that such graphic design firms might be sued as culprits by the governmental agencies since their graphic designs do not meet the set regulations as stipulated by Ghana Food and Drugs Authority (GFDA, 2013:2). Moreover, in the event of any publication of an advertisement [or packages] not approved by the Authority, the sponsor, advertising agent and the advertising media organization shall be jointly and severally liable (GFDA, 2013:2). These regulatory bodies are external but have immense control in the graphic design practices as captured in Figure 6.4. The use of these regulators is appropriate because the economic domain (profit) is an extremely powerful motivator and to counter it, graphic designers' ethics alone might not be enough to advance sustainability. These two governmental regulatory bodies work directly with the graphic designers and graphic designers' clients for clearance and certification of the graphic designed products. This collaborative approach creates a flourishing atmosphere for sustainability.

An analysis of the interlacing nature of the *rule* unit, from an Activity Theory perspective, as depicted in Figure 6.2, suggests that it permeates into all the other units to control the

various tools/materials, graphic design content as well as the firm's policies. This signifies that sustainable graphic design practices depend on strong personal ethics and collaborations with external regulatory bodies.

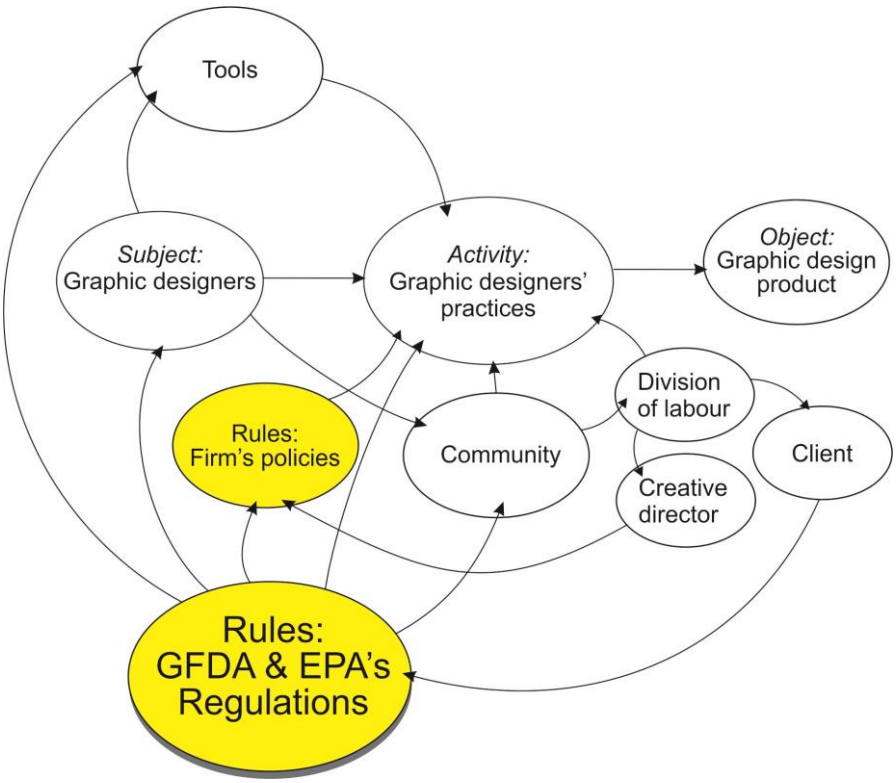

Figure 6.2: The interlacing nature of the rule unit in graphic design practices (Author's construct, 2019)

6.4 Discussions regarding the graphic design activities through the lens of Activity Theory and the Sustainability Development Analytical Grid

In exploring how graphic design activities were carried in the context of sustainability, the questions posed covered three Activity Theory units; activity, community and division of labour. The essence was that these three units overlap making discussing them together ideal. The questions were:

How do the graphic designers and multiple actors engage in the activities to produce the graphic design product?

Who are the multiple actors who engage in graphic design production?

What are the various tasks executed by the multiple actors in the community and which actor controls the tasks?

The findings were woven together for easy presentation. The findings regarding the graphic design activities were in line with the literature reviewed but with few differences. For instance, the literature focused mainly on the pre-press stage of the graphic design practices and on a surface level while this research brought to light in detail the various stages in graphic design practices. Three key stages were unearthed in graphic design practices.

They consisted of pre-press, press and post-press. These stages were also captured by AIGA (2015) in an expanded form of five stages but the various activities are similar.

At the pre-press stage, the graphic designers employed their intangible skills, for designing, and selection of materials for the graphic design products with the help of the creative directors and the graphic designers' clients. The graphic designers, clients and the creative directors were able to work together in creating visual statements amicably. Working together amicably certifies the integration core component of social responsibility, through cross-pollination of ideas with little disagreement due to individuals' preferences. All the graphic designers interviewed and observed were occupied with the creation of visual statements, which is labelled as the core mandate of graphic design (Collins et al. 2012). The pre-press stage covers transferring the design onto a film used to make the plates for the printing. The process of transferring the image onto the film uses an image developing chemical. When these chemicals (developers and fixers) were too weak in developing more images, they were bought by for processing jewellery; therefore waste was reduced drastically with minimised impact on the environment in the case of disposal. In the case of the press, the by-products were used inks which were washed away into gutters using petrol mainly. This practice had posed serious environmental consequences but in the case of the used papers for the print test, they were bought and recycled.

Waste was also minimised in the press. The scenarios of by-products re-usage for industrial purposes also manifested at the post-press stage as elaborated in Chapter 5 section 5.4.3. The findings on the re-usage of by-products of the graphic design practices were mostly initiated by the people in the community, indicating that society poses innovative solutions to the sustainability challenges created from graphic design production. Aside from the re-use of most of the by-products, almost sixty-five per cent of the by-products were put to good use as shown in Figure 6.3 but there were health implications associated with some of the unapproved chemicals used in the press.

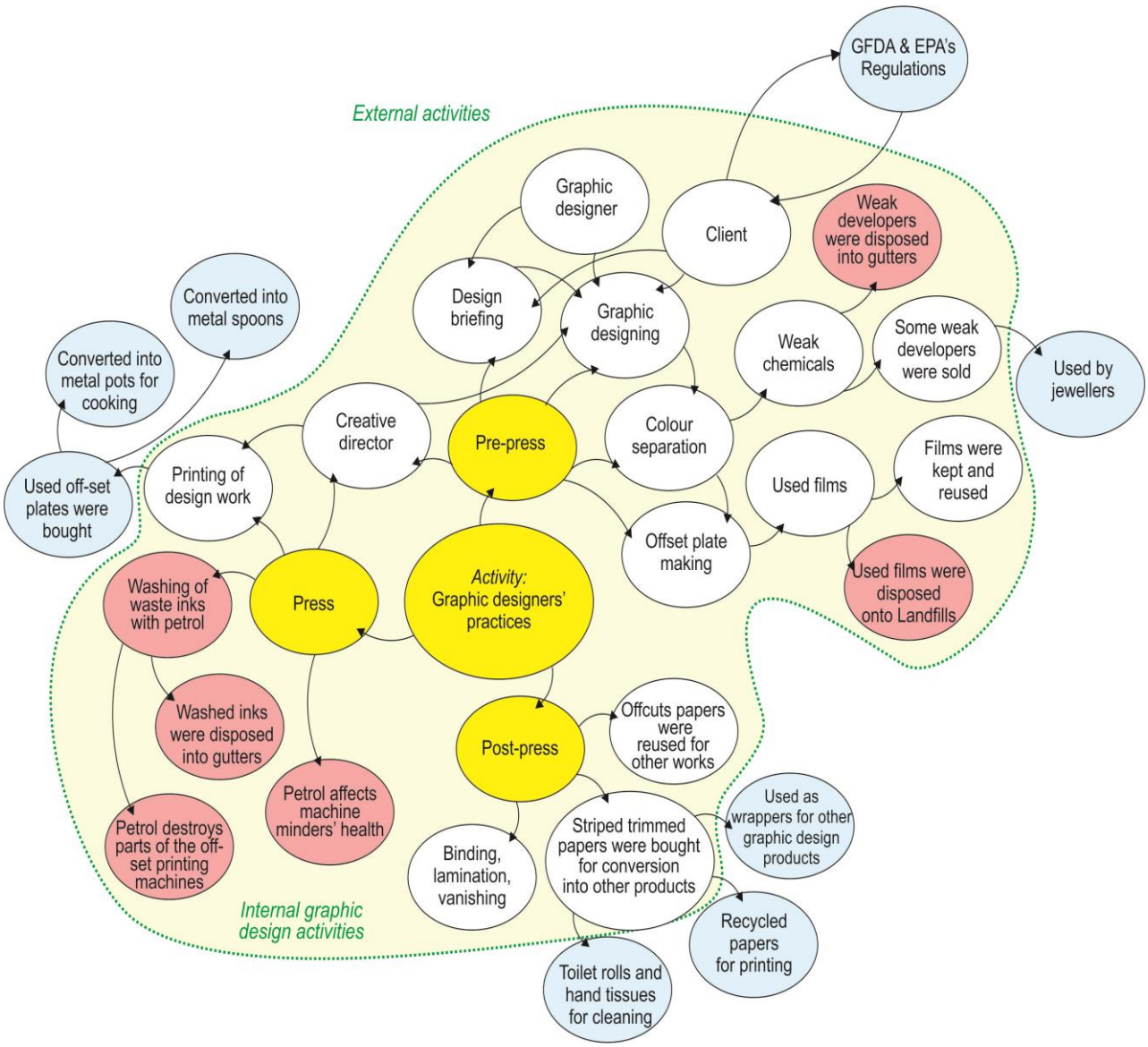

Figure 6.3: Expansive nature of the activity unit in graphic design practices (Author's construct, 2019)

These innovations sprang up as a result of some members of the society striving to survive financially or to meet their needs - which is in line with cosmopolitan localism by Manzini and M'Rithaa (2016:279). Manzini and M'Rithaa (2016:279) further purport that cosmopolitan localism is key because it makes societies more resilient to social and economic uncertainties through opening up to the global flow of ideas and developing local solutions depending on available resources. In the case of economic viability, the aesthetic components of the designs were the strong factor for patronage. The solutions brewing in most aspects of the graphic design practices towards sustainability as discussed earlier in the paragraph, are evidence that we do not have to start from zero (Manzini, 2010:8). The graphic designers, therefore, need to harness the brewing sustainable opportunities within their reach in society and refine the innovations to ease the challenges in the pink zones in

Figure 6.5. This is discussed extensively in the tensions and development domain of the Activity Theory in the light of the Sustainability Development Analytical Grid in the next subsequent sections.

6.5 The object and outcome units perceived from Activity Theory and Sustainability Development Analytical Grid perspectives

The object is actually the manifestation of the enormous design considerations or decisions taken by the graphic designers, creative directors and the clients collectively within the regulatory directions of the Ghana Food and Drugs Authority as well as the Environmental Protection Agency. The assessment of the graphic design products was carried out in two major ways, which were the content communication and the physical product based on the question:

> *What are the influences of the finished graphic design product on the environment, society and the economy?*

From the findings regarding communication, the content structure or informational hierarchy of the graphic designs assessed had no flaws but had typographic mistakes which at times cost the companies dearly. These mostly happened because of fatigue on the side of the graphic designers, the low educational standard of some of the graphic designers and poor proofreading and editing skills. On an aesthetic level, there were printing errors resulting from obsolete offset printing machines, lack of skills on controlling colours and ensuring proper registration of colours. The outcome of the content and physical nature of the graphic design products suggests that there were challenges at the division of labour. Thus the clients might have failed to do their proofreading well, graphic designers over-concentrated on design and the creative directors might not have engaged the services of an editor or proof-reader. These amounted to the errors that lead to the rejection of most affected works and consequently affected the profit margin of the graphic design firms. These economic challenges were not captured by authors in the literature, however, it is a disturbing fact that needs necessary attention in an environment where most of the graphic designers have low grammatical skills.

From the lens of sustainability, regarding quality products in the domain of economic viability, some of the graphic design products did not meet the criteria of the expected quality due to the loopholes such as typographical errors and badly printed works. This affected the profit of those projects because most of those works were rejected and that affected the financial viability of some graphic design firms. In the societal domain, regarding the information on safety and truthful information in the case of advertising and packages, the safety checks were done by some ethical graphic designers and Ghana Food and Drugs Authority. Aside from the checks by the Ghana Food and Drugs Authority, the Environmental

Protection Agency also check for the environmental impact of the packages and give rightful colour codes for specific product design before they issue certification identity numbers. Thus the ethical graphic design designers work with these governmental regulatory bodies to ensure that safety and security checks are in place for the society against promoting all kinds of products which is in line with Berman's ideology of “do not just do good design, do good” (Berman, 2008:2). This implies that the Ghana Food and Drugs Authority, the Environmental Protection Agency and the ethical graphic designers play a critical role of gatekeeping that averts Leblanc's (2010:v) assertion that graphic designers are controlled by the current economy, especially by companies with planned large profit targets leverage the potential of the services of graphic designers to meet their profit goals. Nevertheless, from the findings, there were some graphic designers whose design product did not meet the set standards because they were unaware of those standards. Others were aware but decided to ignore those ethical standards in other to make a profit. In such a situation, these regulatory bodies are there to help put the interest of such graphic designers in check for the safety of the society and the environment.

The outcomes of graphic design practices were four-fold. They were the physical benefits from the graphic design products, the effects of the by-products from the graphic design practices, experience acquisition in graphic designing practices and the end-life of the graphic design products. Regarding the physical benefits, the graphic design products were able to meet the needs of the clients implying that the graphic designers were able to understand the problem of the clients and were able to creatively put together visual statements that helped to solve the clients’ problems. It further elucidates that the intangible skills of the graphic designers in creating the graphic design product were potent due to the graphic designers' interest in self-tuition through YouTube regarding skills improvement and graphic design applications usage.

The by-products from the graphic design practices had two dimensions. First, the offset printing ink residue was washed with petrol and kerosene. This practice has health-related issues. Second, the off-cuts and the stripe-trimmed papers were also used as industrial raw materials by other companies for conversion into other products. In the case of cardboard packages, they were also reused for notebook covers. Water pack sachets or bottles were collected as an economic venture and resold to companies for recycling. Other people also created a bank of waste plastic package substances in large quantity for companies to buy from. This helped, in turn, to reduce inappropriate plastic waste disposal through the social innovation that can be termed as “Waste for cash”. This approach helps check environmental pollution leading to a cleaner environment. The last outcome was related to graphic design experiences gained from graphic design practices. The graphic designers

learnt knew design applications and graphic design skills in order to remain relevant in the design field. They were also able to apply the skills gained through creativity to other design fields such as interior design and fashion design. The designers obtained a technique of open-creativity beyond borders from critical and reflective inquiry (Winters, 2013:2), and this technique enabled trans-disciplinary innovation, which affirms Barnum's (2017), assertion that designers can chart alternative paths by leveraging their design potentials to their advantage.

6.6 Developments: disruptive innovations, tensions and cosmopolitan localism in graphic design practices.

Development is not captured as a unit in the Activity Theory. It is mostly considered as the emerging situation in an activity that is tagged as either disruptive innovation with positive or negative outcomes or tensions interfering with the execution of an activity. Technological innovations especially social media communications and open source web applications were the major disruptive developments to the practice of graphic design at Asafo in Kumasi, Ghana. Social media communications affected the print media patronage because most clients did not print their graphic design product. They rather disseminated the graphic design works via WhatsApp, Facebook or Instagram, which has impacted positively on the sustainable graphic design practices because almost everyone now uses WhatsApp for receiving magazines, brochures, flyers and programme outlines at events leading to the reduction in the production of these materials. This when viewed from a bigger picture perspective, has environmental benefits and should be encouraged as a practice in our society.

The other disruptive innovation was open-source design applications that were used by non-designers to create their own designs, which affected the patronage of the services of some graphic designers. This approach is environmentally focused and thus is geared towards reducing environmental degradation. From a social consciousness perspective, there could be severe risk associated with the open-source application usage due to the fact that the users might not be well educated in the ethics of designing. Thus, informal-trained designers might engage in designs that might have negative social consequences because the designs might not be vetted by the governmental regulatory bodies before they are disseminated via social media. It is, therefore, a necessity for non-designers to engage the services of designers for sustainable design practices to be perpetuated by even non-trained graphic designers.

6.7 Challenges to sustainability in graphic design practices

This section provides findings that answer the question:

What are the challenges to sustainability in graphic design practices?

The challenges witnessed in this research through the lens of the Sustainability Development Analytical Grid have been tabulated in Table 6.0 using the units in Activity Theory.

Table 6.0: Challenges to sustainability in graphic design practices (Author's construct, 2019)

Activity Theory Unit		**Challenges /Tensions**
Subject	Graphic designers	Graphic designers lacked education on sustainability and its relationship with graphic design practices
		Poor proofreading, typographical and grammatical challenges
		Lack of understanding of colour profiles
		Most graphic designers just adhered to Ghana Food and Drugs Authority and Environmental Protection Agency standards without an in-depth understanding
Object	Graphic design product	Some graphic design products did not meet the Ghana Food and Drugs Authority and Environmental Protection Agency standards
		Products do not have repurpose symbols or symbols of other products that the used packs could be converted into from sustainability perspective
Outcome	After-use of the graphic design products	The empty packages and other used graphic design products were disposed of thoughtlessly
Tools	Tangible design tools/ materials	Oil inks contained acid and harmful chemicals
		Eco-Inks were scarce and expensive
		Appropriate ink washing chemicals were expensive
		Oil inks for digital printing last longer but were hazardous for the environment and humans when inhaled
		Petrol and kerosene were used for washing offset printing machines after printing
Rule	Ghana Food and Drugs Authority and the Environmental Protection Agency	Ghana Food and Drugs Authority and Environmental Protection Agency do not engage the graphic designers regarding their required standards for better understanding and compliance
		Some graphic design products get to the market without being vetted by the Ghana Food and Drugs Authority and Environmental Protection Agency
Community and division of labour	Clients Creative directors	Some clients' choices were put first without considerations of the works' impact on the environment and the society at the expense of their economic benefits
		Some creative directors also forced their design firms' standards on the graphic designers
	Print machine minders	Mediocre attitudes towards professionalism
		Some printing and cutting machine operators failed to observe safety precautions

Activity	Pre-press	Films had no economic value and were disposed of onto landfills
		Weak chemicals (developers and fixers) were at times disposed of into gutters
	Press	Lack of understanding of instructions on chemical disposal and negligence
		Lack of knowledge on waste separation
		Poor printings leading to rejection of graphic design works
		The same offset printing oil inks were used for printing all kinds of work (packs for edible and nonedible substances)
		Machines are old making their regulations difficult
	Post-press	Off-cuts and strip-trimmed papers

6.8 Emerging cosmopolitan localism: a possible means of easing tensions in graphic design practices towards sustainability

The findings under this section respond to the question:

What are the emerging-design interventions developed to counter the challenges to sustainability in graphic design practices?

This section elaborates on the innovative design interventions developed and how they were used in solving some of the major challenges to sustainability captured in Table 6.1. Though there were enormous tensions, some were resolved as a result of the design community's innovative abilities to see the economic value in some by-products from graphic design practices. The resolved challenges were done not directly in the name of sustainability because most actors within the scope of graphic design practice and the community were not familiar with the concept; they did so mostly on economic grounds, environmental beauty or for societal safety but these three domains show sustainability in practice. This implies that some graphic designers or people in society are able to mobilise diffused social resources such as creativity and skills for entrepreneurial purposes (Manzini, 2010:9). These local innovations affirm Manzini's (2010:9) assertion that every country in the world has promising innovations that can be recognised as significant steps towards sustainability.

A typical example of such promising innovation was how the graphic designers utilised A4 boxes and other product boxes as paperbacks for making notebook coverings, making it a perfect example of reuse of waste boxes as seen in Figure 6.6. Some graphic designers also use social media for dissemination of information-rich graphic design works to reduce environmental impact from using paper as seen in Figure 6.5. This minimises environmental decay and promotes economic benefits. Another example of local solutions was the collaboration among some the graphic designers, their clients and the governmental regulatory bodies ensuring that graphic design activities or products do not have negative consequences on the society by working according to the set regulations as depicted in

Figure 6.4. The other examples of local solutions to some of the challenges to sustainability in graphic design practices were initiated by some people in society. For instance, weak image developer solutions were bought by jewellers for processing their jewels. Used offset printing plates were also bought and converted to cooking pots and aluminium spoons as captured in Figure 6.7. Used banners were sewn together and used for canopies, others were used by farmers for drying their farm produce such as maize and beans, while others were used as mattress covers for babies to sleep on.

Figure 6.4: Vetted design by FDA for societal safety (www.pulse.com.gh)

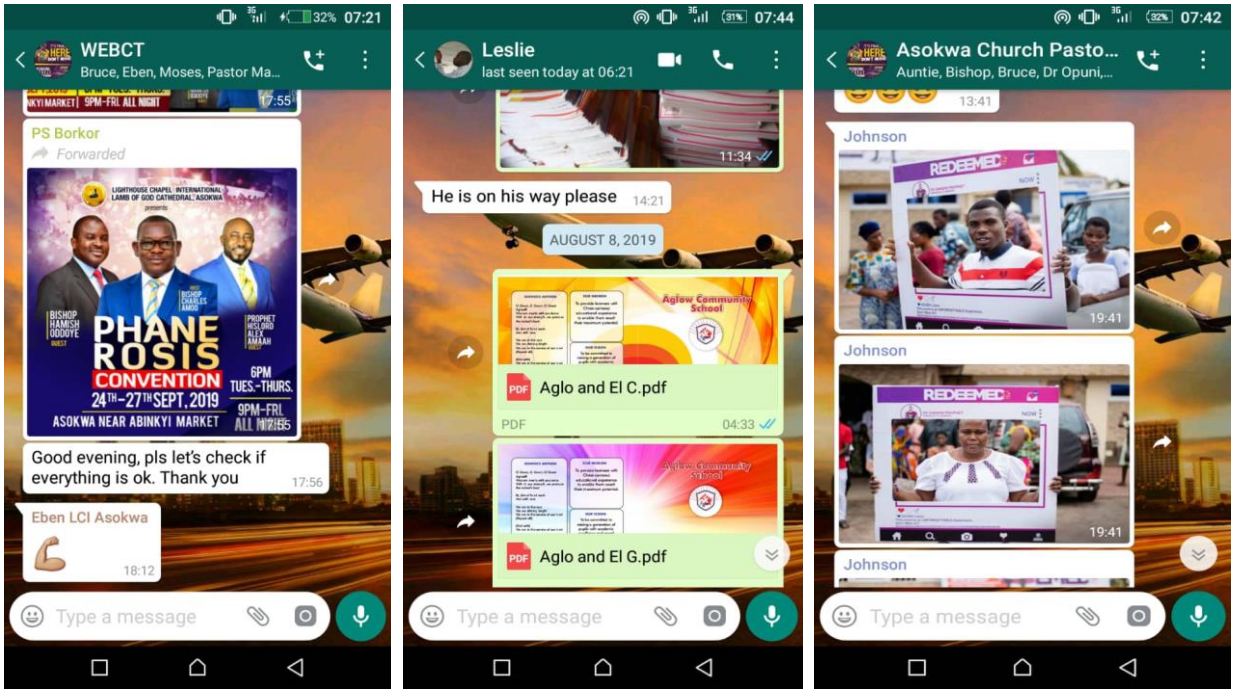

Figure 6.5: Graphic designers mostly use social media for dissemination of information-rich graphic design works to reduce environmental impact from using paper
(Author's photograph, 2019)

Figure 6.6: Bottled water packages opened up for re-use as notebook coverings to reduce environmental impact from recycling - with high economic benefits
(Author's photograph, 2019)

Figure 6.7: Used offset printing plates converted into a cooking pot
(Author's photograph 2019)

A sustainable innovative intervention such as Figure 6.7 is not directly done by the graphic design community but it influences the choice of materials by the graphic designers. This reduces the impact of harm the environment, generates economic benefit has no negative impact on the society from a sustainability perspective.

These are emerging solid pieces of evidence that are becoming the most convincing answers to some dramatic challenges we now face (Manzini, 2010:8). Manzini and Tassinari (2012:6), consider the community within which these innovations take place as creative communities that build their own solutions using whatever they can find useful within their vicinity using existing ideas, accessible technologies and living traditions. Looking at all these emerging local solutions, Manzini (2010:10) concludes that there is no hope for implementing sustainable solutions without considering the concept of cosmopolitan localism in the framework. All these innovations connote that solutions to most problems can be resolved contextually and by the local people in a local way and with global essence.

Manzini (2010:8) further adds that designers and design researchers have a major role to play in advancing these local solutions in the name of sustainability by feeding the social conversation with visions and proposals through collaborating with diffused social actors. This implies that designers and researches should not ignore the innovations from the 'grassroots' visionaries but rather explore alternative ways of improving them to promote sustainability. The essence is that for these innovations to thrive and work efficiently there should be direct and creative participation of the locals who have the tenacity to adapt to the available specifications within their small and a local system (Manzini, 2011:103). Considering these scenarios in the context of graphic design, graphic designers and the locals should work together in advancing the already existing sustainable examples. This chapter is, therefore, carried out in a similar vein, by first aligning the challenges identified in the graphic design practices from a sustainability perspective and mapping them to emerging solutions, which is captured in Table 6.1. The remaining challenges without solutions are tackled in the next chapter through a workshop aimed at developing conceptual solutions towards sustainability in graphic design practices.

Table 6.1: Mapping challenges to cosmopolitan localised solutions (Author's construct, 2019)

Activity Theory Unit	**Challenges /Tensions**	**Cosmopolitan localised solutions**
Subject - Graphic designers	Most graphic designers lacked education on sustainability and its relationship with graphic design practices	Some graphic designers were conscious of their design practices' effect on the environment and on society
	Poor proofreading, typographical and grammatical challenges	Some graphic designers were using computer-aided grammar check tools such as *Grammarly*
	Lack of understanding of colour profiles by some graphic designers	They were aided by those who understood colour profiles and its implications in printing
	Most graphic designers 'merely' adhered to Ghana Food and Drugs Authority (FDA) and Environmental Protection Agency standards without an in-depth understanding of their role	Some adhered to the FDA standards because they understood the consequences as a result of querying the FDA and EPA officers through their clients
Object- Graphic design product	Some graphic design products did not meet the Ghana Food and Drugs Authority and Environmental Protection Agency standards.	The graphic design products were sent to the FDA and EPA for certification
	Products do not have repurpose symbols	
Outcome – Post-consumer use of graphic design products	Some empty packages and other used graphic design products were disposed of carelessly	Some of the empty packs were reused for wrapping food, others were used for parcelling, others for making notebook covers. Others like sachet plastics were handpicked and sold to recycling companies. Banners were reused by farmers for drying maize and for covering substances
Tools - Tangible and intangible designing tools/ materials	Oil inks contain acid and harmful chemicals	FDA banned products containing harmful substances that they seize on the market
	Eco-Inks were scarce and expensive	Some managed to use the appropriate ink but their production cost increased substantially
	Appropriate ink washing chemicals were expensive	Some graphic design firms used the appropriate chemicals for washing their machines because it ensured the quality of work
	Oil inks for digital printing last longer but were hazardous for the environment and humans when inhaled	Some graphic designers opted for eco-inks with had low environmental and health impacts
	Petrol and kerosene were used for washing offset printing machines after printing	
	Waste inks were disposed of into gutters	Some design firms 'managed' to bury the waste ink after working hours
Rule - Ghana Food and Drugs Authority and Environmental Protection Agency	Ghana Food and Drugs Authority and Environmental Protection Agency did not engage the graphic designers regarding their required standards for better understanding and compliance	The FDA and the EPA officers rather worked with the clients who in turn relayed information to the graphic designers

	Some graphic design products got to the market without being vetted by the Ghana Food and Drugs Authority and Environmental Protection Agency	EPA and FDA mostly undertake market sampling to check for compliance with the set standards
Community and division of labour - Clients Creative directors	Some clients' choices were put first without consideration of the work's impact on the environment and on society (at the expense of their economic benefits)	
	Some creative directors also forced their design firms' standards on the graphic designers	
Print machine minders	Mediocre attitudes towards professionalism	
	Some printing and cutting machine operators failed to observe safety precautions	
Activity - Pre-press	Films had no economic value and were disposed of onto landfills	Some films kept well and were reused when the need arose
	Weak chemicals (developers and fixers) were at times disposed of into gutters	Developers were bought and used for processing pieces of jewellery by jewellers and at times by blacksmiths
Activity - Press	Lack of understanding regarding instructions on proper chemical disposal and subsequent negligence	EPA is responsible to enforce rightful disposal of chemicals after printing
	Most firms lacked knowledge on waste separation	Some design firms managed to separate their domestic waste from their industrial waste. The industrial waste such as trimmed papers was sold and used to pay for the domestic waste processing
	Poor printings leading to rejection of graphic design works	The rejected works were bought by paper converters
	The same oil offset printing inks were used for printing all kinds of work (packs for edible and nonedible substances)	
	Machines are old making their regulations difficult	Graphic designers designed to hide the default of the offset printing machine for economic viability
	Used offset plates occupied printing space in the press	Most used offset plates were sold and converted into metal cooking pots and metal spoons
Activity - Post-press	Off-cuts and strip-trimmed papers	The off-cuts were used for miscellaneous publications while the strip-trimmed papers were bought by paper converters

6.9 Summary

This chapter was a continuation of Chapter 5. It focused on the discussions of the findings through Activity Theory and Sustainability Development Analytical Grid in Chapter 5. The discussions stem from the foundation that sustainability is related to the regulation of activity using economic, societal and environmental considerations. Thus any consideration that does not factor the three domains ceases to be labelled as sustainable. In the rule's unit personal ethics and institutional standards regulated all activities, the graphic designers engaged in. Regarding the subject's domain, the graphic designers were driven by two major trajectories, which were motivation and education. Though their motivation and formal education did not reflect sustainability practices, they were engaged in a form of sustainability practices, which were as a result of personal ethics and regulations from the Ghana Food and Drugs Authority and Environmental Protection Agency. Thus a form of societal responsibility and environmental consciousness were traced. This implies that graphic designers have already started a form of sustainability practices and therefore advancing the cause of sustainability will not be difficult. The next item was the intangible and the tangible materials and tools (tools' unit). The tangibles depended on the intangible for manipulation into the object desired or graphic design product. The tangible by-products from the graphic design activities were reused or recycled into other products, which meant less negative environmental impact.

The rule's unit was also driven by personal ethics and institutional standards as mentioned earlier. The rule unit was central in the graphic design practices a far as sustainability was concerned. The personal ethics that were exhibited by the graphic designers were supported by the Ghana Food and Drugs Authority and Environmental Protection Agency standards, which were generally adhered to by the graphic designers. However, there were few cases where some graphic design products were on the market without certification by Ghana Food and Drugs Authority and Environmental Protection Agency. This implies that they have to intensify their routine surveys to root out such designed products from the market.

The activity unit was merged with the division of labour and the community units. The activity space consisted of the prepress, press and the post-press. There were few challenges with proof-reading and there were typographic errors that threatened the economic viability of the design firms. Most by-products form the activities were bought and processed into other products by paper converters. Collectors of used package material sold them for economic benefits. The last part of this chapter focussed on developments from the concept of Activity Theory. It consisted of disruptive innovations, tensions and cosmopolitan localism. The disruptive innovations that hit the graphic design industry in Ghana were the social media and paperless systems but these were positive for the environmental domain of

sustainability with massive economic benefits. The key tensions could be categorised into two; lack of education on sustainability and its relations to graphic design practices. Most of the challenges with the by-products were resolved by society by recycling or converting them into other products, which is regarded as cosmopolitan localism. The next chapter leverages cosmopolitan localism as an approach for practising sustainable graphic design through re-conceptualisation.

CHAPTER SEVEN

TOWARDS A RE-CONCEPTUALISATION OF SUSTAINABLE GRAPHIC DESIGN PRACTICES: A COSMOPOLITAN LOCALISM APPROACH

7.0 Introduction

This chapter attempts to answer the research question:

> *How can the emerging-design interventions be used for re-conceptualisation of sustainable graphic design practices?*

Before I move on to the exposition of sustainable graphic design through cosmopolitan localism as a design intervention for re-conceptualisation of sustainable graphic design practices in this chapter, a quick recap from Chapter 2 to Chapter 6 is offered. This will help to position this chapter well to resonate with the earlier chapters. Using Figure 7.0 as a referencing guide, Chapter 2 employed Activity Theory as a review and analytical guide for the literature on two distinct graphic design activities looking at the before and the after of the introduction of sustainability. The essence was to unearth the trajectories of sustainability in graphic design practice and the challenges that are still inherent in it, which informed the formulation of the research questions that drove the entire study. Chapter 3 reviewed the concept of sustainability and adopted the Sustainability Analytical Grid as a guide for setting sub-questions aided by Activity Theory based on the notion that graphic design is an activity inclined discipline. In this chapter, the human-centred design was regarded as a design research methodology with the aim of reviewing its various components to establish the appropriate methods as a means of data gathering for this research.

In Chapter 4, the researcher's philosophy is disclosed as interpretivism. This informed the choice of the research method, which was also in line with the human-centred design approaches, adopted as the design research data gathering approach for exploring sustainable graphic design practices in a local context. Chapter 5 reported on the findings on exploring how graphic designers carried out their practices at Asafo in Ghana, using Activity Theory and Sustainability Analytical Grid as presentational and analytical lens respectively. In the case of Chapter 6, the findings in Chapter 5 were thoroughly discussed regarding the implications, opportunities and the associated challenges to sustainability as far as graphic design practices were concerned. The chapter elaborated on the concept of cosmopolitan localism and its role in sustainability in the terrain of graphic design practices, advancing the need for approaching sustainability through its doors. Chapter 6 further stipulated the need for advancing the concept of cosmopolitan localism to iron out the challenges to sustainability in graphic design practices identified among the graphic designers at Asafo contextually. Thus Figure 7.0 gives a chronological order regarding how the whole thesis unfolds and how the chapters jointly lead to Chapter 7.

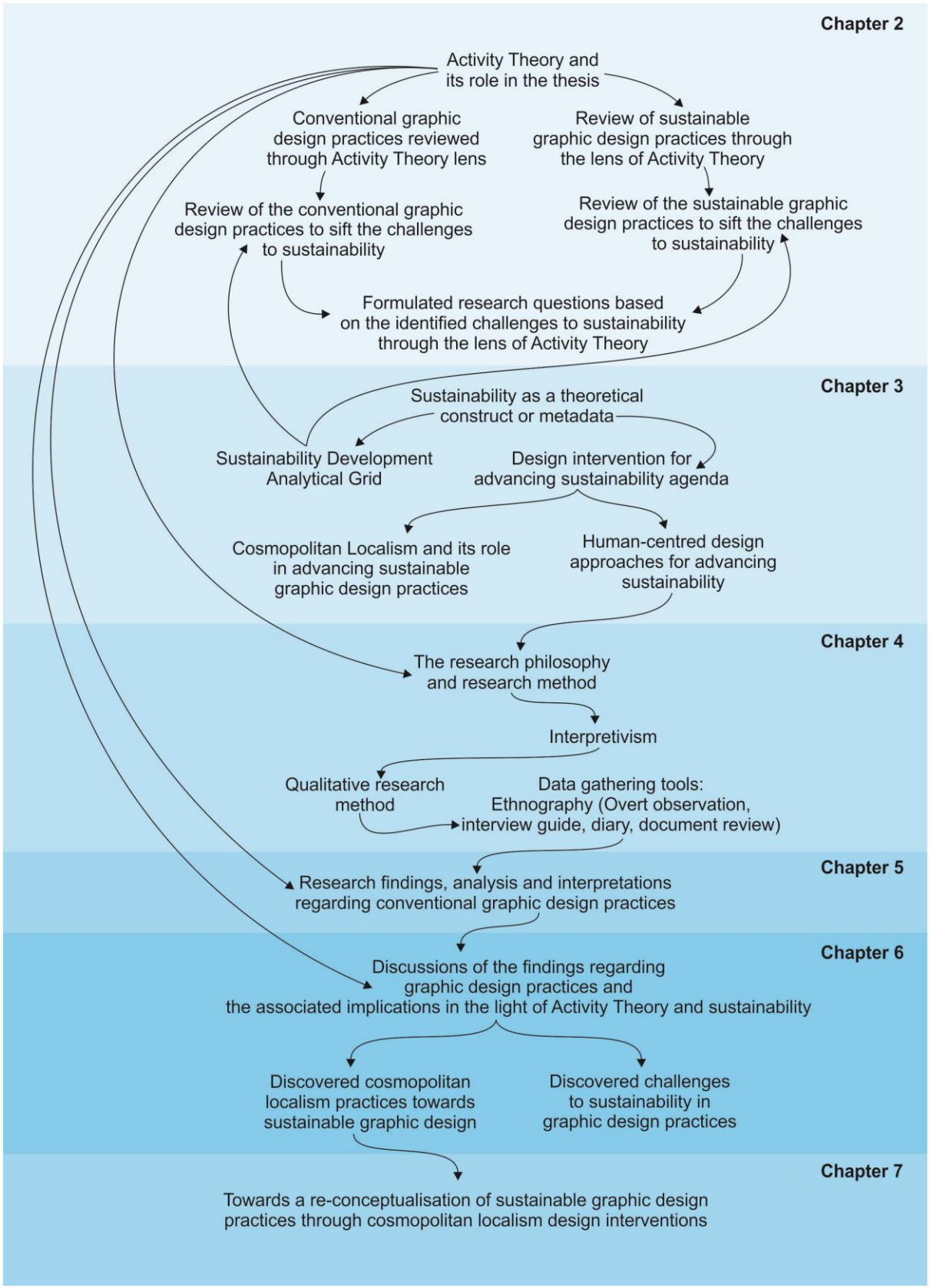

Figure 7.0: Snapshot of Chapter 2 to 7 (Author's construct, 2019)

This chapter reiterates sustainable graphic design practices from the nexus of environmental consciousness as captured in the literature with the aid of Activity Theory to bring to bear the shortfalls that were inherent in that space as far as holistic sustainability and graphic design practices are concerned. It positions the discussion in the framework of sustainability and pinpoints the challenges associated with the open-ended nature of the triple bottom line as a framework for data gathering. A discursive approach to the adoption of a close-ended sustainability model that amalgamated with the Activity Theory and was used as a means for inquiry in gathering data regarding the graphic design practices in this research is advanced. It finally ends with a discussion on the concept of cosmopolitan localism and its connection to grassroots innovations for re-conceptualisation of sustainable graphic design.

7.1 Reiterating sustainable graphic design practices from the literature: an Activity Theory position for conceptualisation

Based on different definitions, I conclude that sustainable graphic design practices are design practices that try to take into consideration environmental, societal and economic factors that are viable for sustainable development. However, from the literature, sustainable graphic design is conceptualised as “green” and thus associated tools and practices were geared towards the “green” evolution. Figure 2.4 captured the shortfalls associated with the green approach and illuminates the need for relooking at the entire sustainable graphic design concept as captured in Chapter 2. In discussing the shortfalls, let us start with the subjects.

1. The **subjects** (the graphic designers’) mind-sets were not disclosed. Though the motivation is the object, there are other intrinsic motivations that drive the entire activity of the graphic designers that were not captured in literature. In the space of the graphic designers and the tools, the graphic designers could not identify with the tools such as biomimicry, design for intentional reuse, cradle to cradle and backwards design due to their complex nature (Dritz 2014). The graphic designers could not also identify the economic value in sustainability.
2. In the space of the **rule** which is occupied by sustainability, some clients perceived the concept of sustainability as vague making understanding and its application difficult.
3. The common sustainability **tools** mostly referred to were biomimicry, design for intentional reuse, cradle to cradle and backwards design. These tools were all ecologically centred excluding economic and the social domains of sustainability. This implies that the frameworks used were all environmentally focused and thus cannot be recognised as a complete framework that advances a complete sustainability approach.

4. These bottlenecks identified in the space of the subject, tools and the rule makes it clear that the **activity** of the graphic designers lacked the required skills needed to advance environmental consciousness, which is even a flaw from a holistic sustainability perspective.
5. The **community** and the **division of labour** are all affected because the concept of sustainability established per the literature is a flaw and thus their respective activities they engage in all were void of complete sustainability approach.
6. The **object** (graphic design product) was eventually affected because if there were flaws with the various units then it would eventually transcend into the product produced. Thus the products were environmentally sound but lacked the economic and societal dimensions as far as considerations of the entirety of sustainability are concerned.

In tracing sustainable graphic design practices by searching for the add-ups to the conventional graphic design practices in literature, much was not spotted in terms of transformation apparently based on how sustainability has been framed or conceptualised. Benson (2007:3) in his article *Ideas for Integrating Sustainability into Graphic Design Pedagogy: American Case Studies* elaborated on the facets needed for the practice of sustainable graphic design, which were:

1. respect and care for the community
2. improve the quality of life
3. conserve Earth's vitality and diversity
4. minimize the depletion of non-renewable resources
5. change personal attitudes and practices to keep with the planet's carrying capacity

Benson (2007:3) further adds other trajectories of sustainability from Hacker (2004) but the economic and the societal components were all missing.

Benson (2007:4) contradicts his own trajectory by stating that "sustainable design must be environmentally safe, economically viable and also socially equitable … if all three of these criteria are not met, then the design has negative environmental and social impacts along the way and is not, by definition, sustainable". The statement is questionable because the fact that a design project is not sustainable does not mean it fails to meet all the criteria of sustainability. It might be environmentally sound but not economically viable. However, Benson's (2007:3-4) criteria did not disclose the facets of the economic and societal dimensions and add the statement that "Sustainability is quickly becoming an environmental necessity" which makes his conceptualisation of sustainable graphic design an environmentally focused one as seen in Figure 7.1. Jedlicka's (2010:ii) book titled *"Sustainable graphic design: tools, systems and strategies for innovative print design"* also

tackled eco-conscious materials and strategy without looking at the economic and societal aspect of sustainability in graphic design practices.

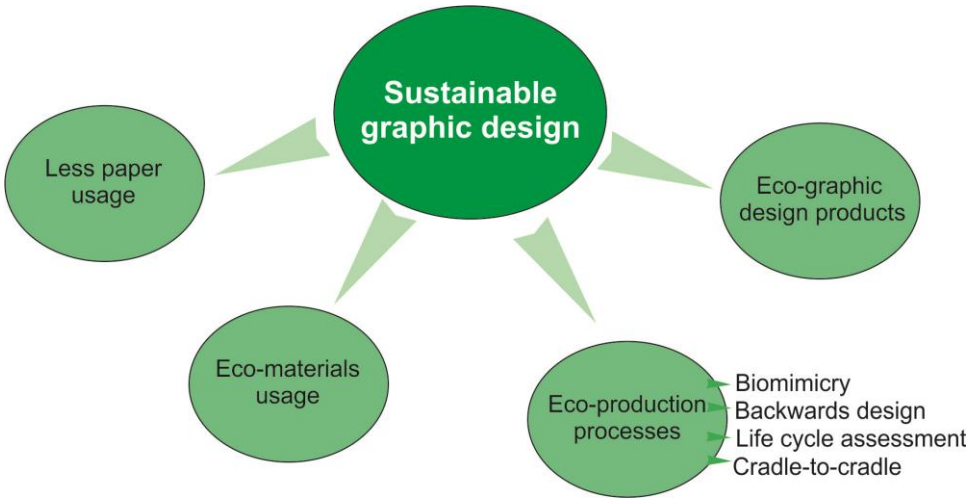

Figure 7.1 Conceptualised sustainable graphic design based on literature (Author's construct, 2019)

In Benson and Perullo's (2017:8) book titled *Design to re-nourish: Sustainable graphic design in practice* they rather looked at economic viability in the light of those the graphic designers advertise for and not the graphic design discipline's economic viability. All these amounts to why there is so much confusion based on Dritz's (2014:) research findings that that graphic designers have not yet come to the consensus on the definition or expectation of the sustainable graphic designer. These findings from the literature necessitated the need for re-conceptualisation of sustainable graphic design through adopting a working sustainability framework that can serve as the foundation for exploring and advancing the concept of sustainability. It led to pragmatically exploring design interventions that were working at the grassroots through the adapted sustainability lens or framework. Exploring the design interventions at the grassroots was in line in with Manzini and M'Rithaa's (2016:279) assertion that local societies have local solutions that reflect global ideas and should be allowed to perpetuate them for resilience. The next sub-topic deals with the disposition of sustainability framework adopted and how it was utilised for fore-fronting cosmopolitan localism through the local sustainable design interventions.

7.2 Cosmopolitan localism and its manifestation in grassroots design interventions for advancing sustainable graphic design practices

Before moving on to cosmopolitan localism and its manifestation in the design intervention in the context of Ghana, there is a need to relook at the sustainability framework or the lens which was used for assessing the practices of the graphic designers and its implication as far as re-conceptualisation of sustainable graphic design is concerned.

7.2.1 Sustainability framework and its implication as an analytical lens for graphic design practices

The sustainability framework adopted as the lens for the assessment was the Sustainability Development Analytical Grid as mentioned and elaborated in Chapter 3 of this thesis. This was adopted because it is an established framework which has been used by other researchers, not in the area of graphic design but since there was no established or emerging framework for the practice of sustainability in graphic design, it was used as the foundation for starting the discourse regarding graphic design and sustainability. Moreover, according to Villeneuve et al. (2017:4), the Sustainability Development Analytical Grid is a diagnostic type of tool with a comprehensive content that addresses all 17 Sustainable Development Goals with capabilities for co-constructing solutions in a holistic perspective. As captured earlier in Chapter 3, the Sustainability Development Analytical Grid is made up of six indicators (ethical, social, ecological, economic, cultural and governance) but they were reconfigured into three indicators based on the triple bottom line due to the overlapping among the indicators. Under the selected indicators were themes which were also selected based on their applicability to graphic design practices. Figure 7.2 gives us the Sustainability Development Analytical Grid indicators and themes used as a lens for gathering data from the graphic design practices.

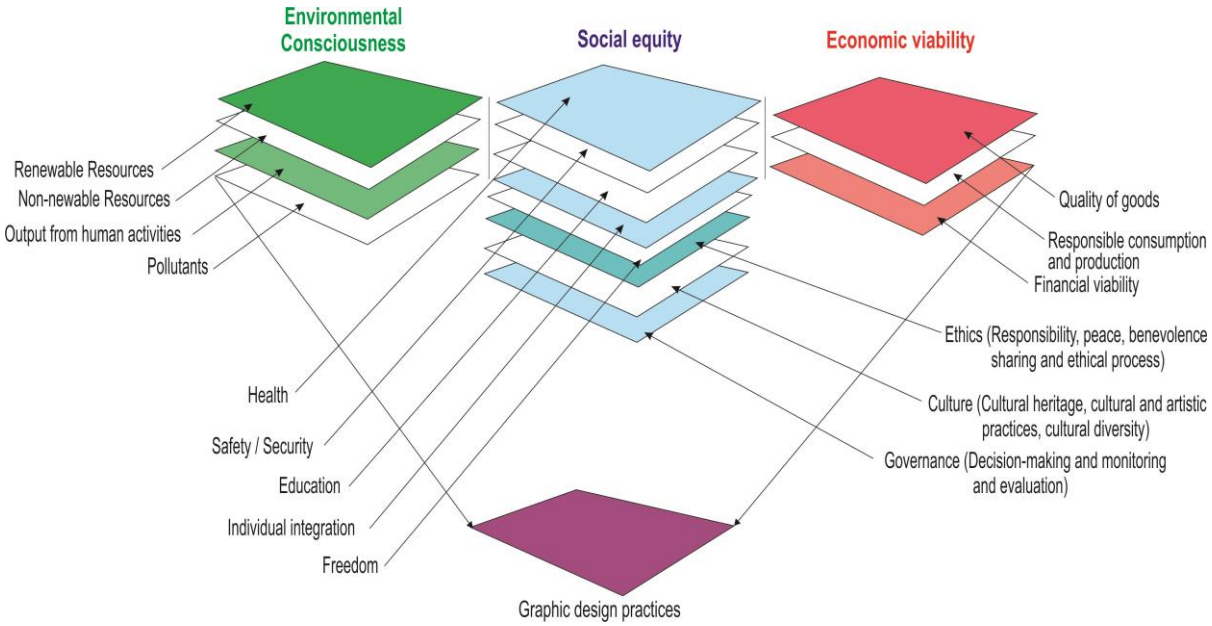

Figure 7.2: Re-configured Sustainability Development Analytical Grid as a lens (Adopted from Villeneuve et al. 2017:5; Villenueve & Riffon 2012:9)

By implication, the Sustainability Development Analytical Grid as a lens made it possible to view the graphic design practices from three different angles with specific assessment tools that made holistic sustainability assessment possible and also helped in discovering graphic design practices which were in line with sustainability from a local context that was not only

eco-conscious but encapsulated the economic and the societal aspects as well. Thus the design considerations for the content of the graphic design products, the materials and production processes were the major areas that the sustainability practices manifested based on the Sustainability Development Analytical Grid adapted.

7.2.2 Cosmopolitan localism manifestations in grassroots graphic design interventions for sustainability

Manzini (2010:8) advances that to counter challenges in this era in our economy, society and environment we do not have to start from zero because there are already working local models that are emerging in the grassroots. These local models address some of the global challenges to some extent. These local-global solutions are termed as cosmopolitan localism. In the case of the graphic design practices from a sustainability perspective, using the Sustainability Development Analytical Grid, similar local-global solutions were spotted that were done in a small, local, open and connected way. These solutions have been stated already in the latter part of Chapter 6, but this sub-topic connects them to the four characteristics of cosmopolitan localism from implications perspective.

Using the re-configured Sustainability Development Analytical Grid as the lens for viewing the graphic design practices, the following were the design interventions that were discovered in the entire graphic design practices from content creation to the graphic design production processes, which were major cosmopolitan localism practices from Activity Theory perspective:

1. **Subjects (Graphic designers):** Most of the graphic designers adhered to the Ghana Food and Drugs Authority guidelines and the Environmental Protection Agency regulations. These regulations served as design interventions guide for the graphic designers that steered their design decisions making them factor environmental and societal consciousness in their graphic design products or projects.
2. **Tools (Intangible/tangible materials):** Regular education by the graphic designers through YouTube certified the criteria of education in the aspect of social sustainability which improved their design skills and affected their design output making their graphic design practices economically viable. Materials waste was minimised by making sure that designs finished sizes conformed to available paper off-cuts. Even A4 paper boxes and other products boxes were repurposed by cutting them and using them as notebook covers. These made graphic design production economically viable and helped to reduce environmental impact by using waste materials like the A4 paper boxes.

3. **Rules (Ghana Food and Drugs Authority & Environmental Protection Agency):** These regulatory bodies shaped designers decisions in the light of environmental and societal considerations. The design principles that the graphic designers leveraged in their works helped their practices to become economically viable.
4. **Activity (Pre-press, press and post-press):** Most used films were kept and reused. Waste films were used by the printing machine minders as improvised blanket support for damaged printing blankets. Offset plates were sold for conversion into other products. Weak image-setter developers were bought by jewellery makers for processing their jewels.
5. **Community and Division of labour:** Most graphic designers, the creative directors and the clients were able to integrate well for creating design decisions which were integral for sustainable graphic design practices in the space of social equity.

The list goes on and ends with the outcome as captured in Chapter 6. In order not to be repetitive unnecessarily, these were the ways cosmopolitan localism manifested in the graphic design practices from a sustainability perspective. The next sub-topic deals with the design interventions connection to the small, local, open and connectedness of cosmopolitan localism.

7.2.3 Connecting cosmopolitan localism trajectories to sustainable graphic design interventions

Cosmopolitan localism is characterised by the following descriptors: small, local, open and connected. With **small** in perspective, the design interventions were initiated at the local level in different local graphic design firms and presses. For instance, A4 waste boxes were used for making notebooks. This innovation was done by many small scale graphic design firms and presses. Therefore, many graphic design firms and presses were engaged in the innovation, advancing the statement that small can be labelled as nodes that connect to create networks that are local but have a global impact (Manzini, 2011:103). The small from cosmopolitan localism perspective served as experimental grounds for the graphic designers and the associated actors for making errors that were easy to correct due to the smallness of the innovation at the local level (Manzini, 2011:104). The smallness of the innovations, therefore, gives the locals the creative power to continue with the search for workable solutions that were mostly driven by economic factors, societal concerns, environmental consciousness and availability of local resources or materials as captured in Figure 7.3 because they were basically not afraid of making mistakes.

The innovations were **local** but had global implications and reflected global phenomenon such as Sustainable Development Goals. For instance, in the case of Ghana Food and

Drugs Authority and the Environmental Protection Agency, the guidelines are given to the local graphic designers for adherence are tapped from global source but the implementation approach is localised based the behaviour of the graphic designers and how they respond to such a global issue. In the aspect of the **openness** of the local innovations, the mantra was that there were no copyrights on these innovations, therefore, other designers were able to copy and improve the innovations without any legal implications. This gave room for cross-pollination of ideas as the local graphic designers developed their own know-how through leveraging their creativity and available resources for endless possibilities for solutions that pave way for knowledge creation and sharing as indicated among A, B and C in Figure 7.3.

These help in spreading innovations easily, creating a **connected** system that grows at an exponential rate with diverse possibilities for open-ended innovations based on the global flows of ideas within a space of time and the availability of local resources in the given context. These qualities of cosmopolitan localism in the space of sustainable graphic design practices brewed an entire ecology of creative space which utilised a host of ambient resources that generated design skills, design knowledge, critical thinking skills for solving problems, and design methodology as shown Figure 7.3. The next sub-topic deals with how cosmopolitan localism connects to the concept of sustainable graphic design.

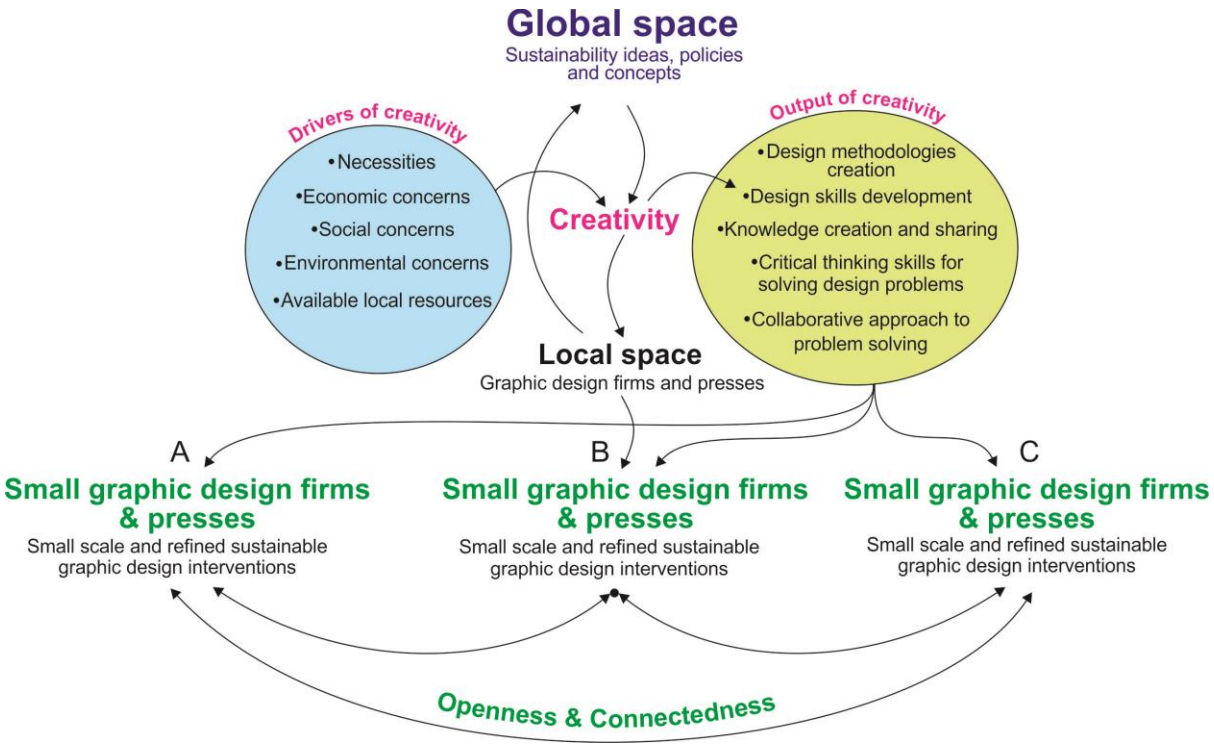

Figure 7.3: Cosmopolitan localism manifestation in sustainable graphic design (Author's construct, 2019)

7.2.4 Cosmopolitan localism's influence on sustainable graphic design practices

Sustainable graphic design by definition is design considerations that take into account the environment, society and the economy in order to ensure that the graphic design content, production process and the graphic design product do not deplete the environment, cause societal harm or creates an economic deficit to the graphic design firm. It even covers post-consumer waste from graphic design products. This implies that cosmopolitan localism plays a major role in shaping the design decisions taken by the graphic designers, creative directors and the clients having in mind the sustainable design interventions. Figure 7.4 shows how cosmopolitan localism design interventions influence design considerations in the light of sustainability.

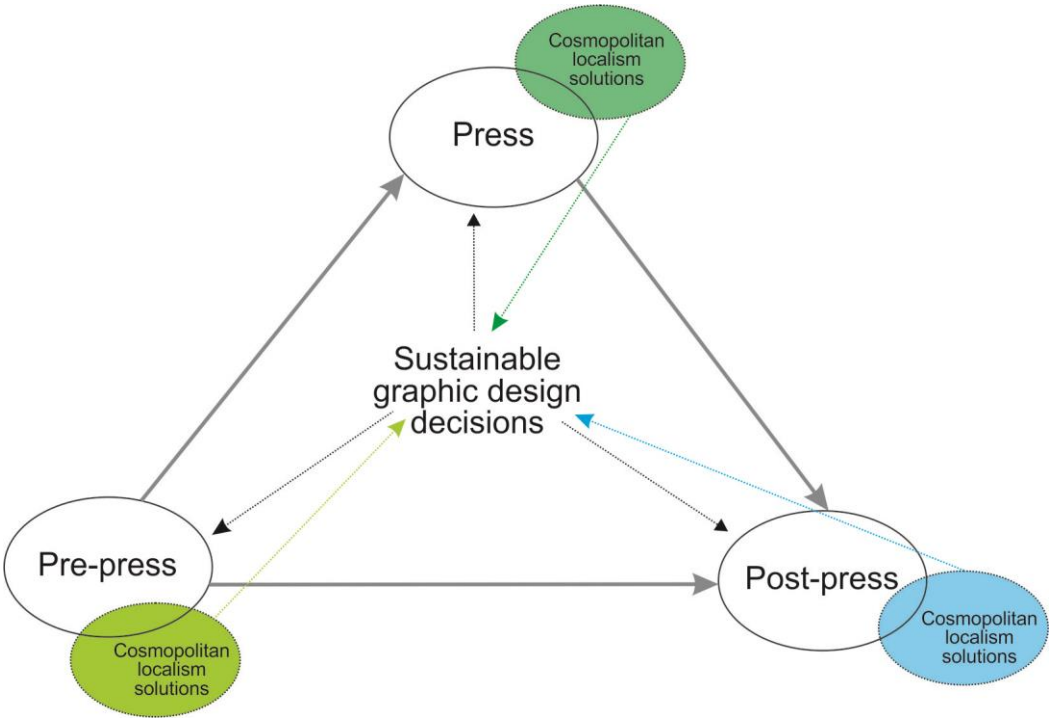

Figure 7.4: Cosmopolitan Localism's influence on sustainable graphic design practices (Author's construct, 2019)

7.3 Re-conceptualisation of sustainable graphic design practices: a proposal

The findings based on the usage of Sustainability Development Analytical Grid as the lens for assessment and exploration for emerging sustainable graphic design interventions indicate that sustainability goes beyond just environmental consciousness. It covers societal concerns and economic benefits as well, which is emphasised by Bossel (1999:2). The three dimensions, therefore, require equal attention (Bossel, 1999:2). Sustainability, therefore, provides a platform where all three different domains reconcile without any friction, meaning there is no biased interest in any single domain or two domains (Gomis et al. 2010, 16).

Thus, any bias selection of one or two domains will lead to a deterioration of the other(s) since all the three domains are linked together.

By implication, the notion of environmental sustainability without concerns for economic and societal dimensions render environmental sustainability as environmental consciousness, as is the case with the other two domains. In a nutshell, a single domain cannot be regarded as sustainable and the concept of sustainability attached to any single domain's perspective is questionable based on the exposition of Gomis et al. (2010,16). However, Benson and Perullo (2017:) advance that environmental consciousness covers the societal concerns to some extent but that is not always the case especially in situations where the graphic design product's content is false or persuade the audience to engage in a wrongful act for the benefit of the advertising company. Leveraging the components of the Sustainability Analytical Grid and the findings based on this research sustainable graphic design can be re-conceptualised in the form of a proposal to serve a platform for advancing the discourse on sustainable graphic design practices. In this regard, all the design phases from pre-press through the press to post-press will consider or factor the various themes or indicators in the Sustainability Development Analytical Grid as shown in Figure 7.5.

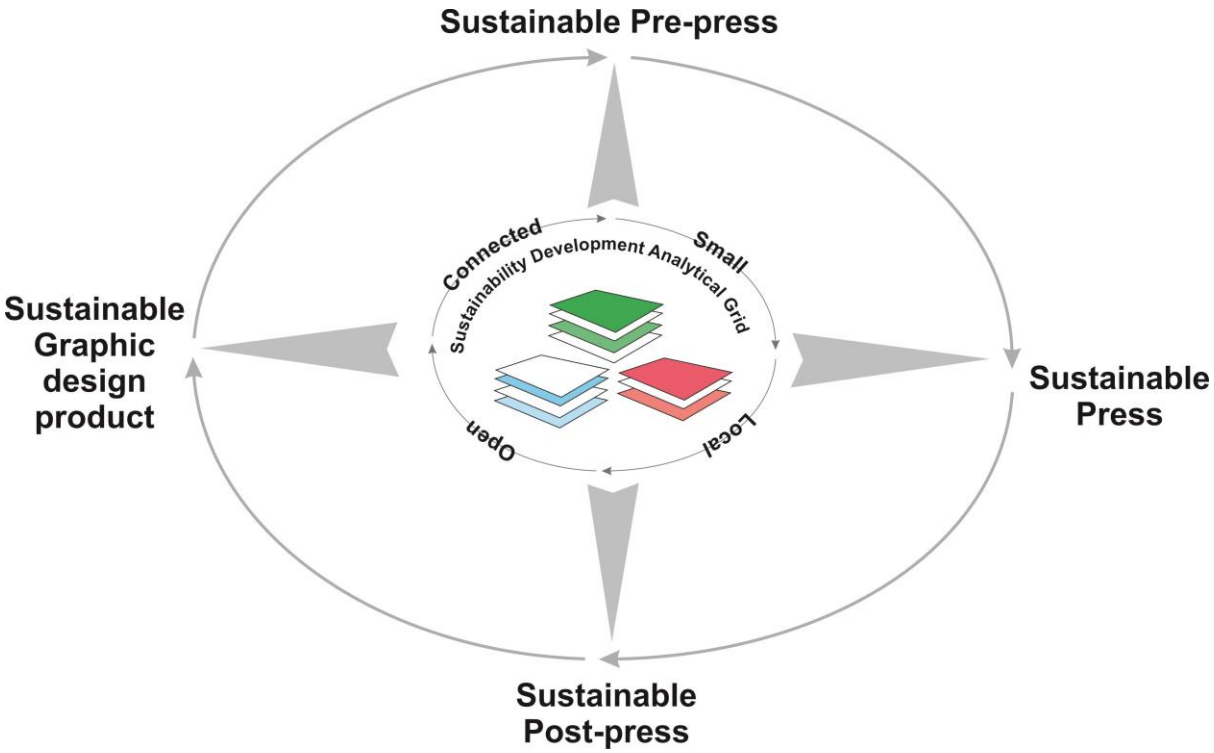

Figure 7.5: Contextualised sustainable graphic design framework (Author's construct, 2019)

This proposed re-conceptualised sustainable graphic design practice is built on cosmopolitan localism giving the graphic designers the room to innovate based on their local context and for conformity to the sustainability Development Analytical Grid in Ghana.

7.4 Summary

This chapter cast light on sustainable graphic design which has been framed as an environmentally-conscious design and argued that it does not satisfy all the requirements of sustainability. It disclosed the concept of various researchers who have advanced the cause of sustainability in graphic design with only environmental approaches which needed revision.

Mainstreaming sustainability approaches also created a major hurdle for the practice of sustainability in the local context due to challenges such as lack of understanding of systems such as biomimicry and design for disassembly by local graphic designers. And tagged such global approaches as close-ended leaving no room for modification by graphic designers should they attempt to employ them for the practice of sustainability. Therefore cosmopolitan localism is rather advanced as a design interventional approach that is open-ended and gives room for locals to carry out their own sustainable practices reflects sustainability as a global phenomenon. Cosmopolitan localism was therefore combined with the sustainability Analytical Grid to serve as the re-conceptualised approach for sustainable graphic design practices.

CHAPTER EIGHT

CONCLUSION AND FINAL REMARKS

8.0 Introduction

This final chapter starts with an overview of the research from Chapter 1 to Chapter 7. It further discusses the contribution of the study from theoretical perspectives through a reflection on the relevance of the conceptual framework to this study. It also gives a reflection on the use of the Sustainability Development Analytical Grid as a theoretical framework with the potentiality of setting the baseline for the practice and assessment of sustainability in graphic design practices and possibly for any other design discipline. It also engages the research philosophy elaborating on how it connects to Activity Theory and Sustainability for realising the aim of the research.

From an Activity Theory perspective, this chapter gives an exposition on the tensions and expansive circles in the graphic design practices through the lens of sustainability, labelling the expansive circles as design interventions created through cosmopolitan localism for sustainable graphic design practices. It further touches on the implication of the re-conceptualised sustainable graphic design practices through cosmopolitan localism elaborating on the strength of the grassroots' innovation for spearheading the Sustainability Development Agenda as the practical contribution of the study.

Under the methodological contribution, an exposition on interpretivism as the researcher's philosophy and its relationship to human-centred approaches as a methodological framework for this study is advanced. It unveils the open-ended dynamism of the data gathering tools for in-depth information in this research and discusses the researcher's experience with the usage of these tools. The limitations associated with the research are disclosed paving way for further research recommendations. Recommendations for design policy, design education, design practice and further research are captured to herald this chapter.

8.1 Chapter summary

In Chapter 1, the concept of sustainability and how it relates to graphic design as a design discipline was established. The current state of sustainability in graphic design as researchers have outlined in different ways, which were all geared towards the approaches of environmental concerns with little or no interest shown in the social and economic dimensions was also established. Based on the environmentally biased approaches, it was made clear that the current state of sustainable graphic design practices is incomplete. It was declared in this chapter that there is a "boomerang" effect that results from the eco-

efficient products or approaches based on Manzini's (2007:26) assertion due to over-consumption. On that front, Manzini (2007:27) made a recommendation that for sustainability to be achieved there should be an add-on of human-centred approaches to eco-efficient approaches, which has already started through social innovations for the attainment of holistic sustainability. However, it is unclear how researchers and graphic designers could initiate this holistic sustainability approach in graphic design. Further to this, there is limited knowledge regarding sustainable graphic design practices in a developing African nation's context due to limited literature concerning graphic design and sustainability, making it difficult to know where to start from.

The purpose of this study was to establish that aside from the environmental consciousness, the societal and the economic dimensions of sustainability are integral for holistic sustainable graphic design practices. It was proposed that it could be done through cosmopolitan localism (Manzini & M'Rithaa, 2016:279), which serves as a platform for design interventions. The aim of this research was to explore and examine graphic design practices to uncover the challenges and solutions to sustainability from a localised developing nation to inform the paradigm shift from environmental conscious graphic design to holistic sustainability in graphic design practices that answeres the question: How can design researchers and graphic designers initiate the shift towards holistic sustainability in graphic design practices in a developing nation? The research, therefore, attempted to build a bridge for this paradigm shift by asking the following questions:

1. How are graphic design practices carried out in a developing African nation from a holistic sustainability perspective?
2. What are the emerging-design interventions developed to counter the challenges to sustainability in graphic design practices?
3. How can the emerging design interventions be used for re-conceptualisation of sustainable graphic design practices?

Chapter 2 started with an introduction to Activity Theory as a presentation and analytical tool for the literature review and the research findings in Chapter 5. In Chapter 2, a review was done from conventional graphic design practices to the current development in sustainable graphic design practices to uncover to what extent graphic designers have embraced the concept of sustainability in their practices. It was discovered that the practice of sustainability has been limited to "green" or environmental consciousness. Moreover, scanty literature was fetched from Africa regarding sustainable graphic design practices. Thus, the scanty literature connotes that the solutions developed to counter challenges to sustainability in graphic design might not be appropriate or may even be existing in different forms in Africa. It was therefore proposed in the chapter that in order to know the state of sustainability

practices in Africa there is a need to explore the practices of the graphic designers to understand how they carry out their activities to uncover challenges to sustainability in their graphic design practices and also search for emerging solutions within the same context and locality of practice to help offset the challenges in the light of cosmopolitan localism.

Chapter 3 discussed the theoretical and conceptual framework underpinning this research. It covered sustainability as a theoretical construct and selected the Sustainability Development Analytical Grid as the tool to advance the concept of sustainability for exploring and examining the graphic design practices. Activity Theory was also leveraged as the analytical tool for this research and was combined with the Sustainability Development Analytical Grid and Human-centred approach as part of the conceptual framework for this study. It also covered an exposition on cosmopolitan localism as a design intervention that could be utilised as a transitional bridge to advance the practices of sustainability in graphic design from a contextual perspective. It also touched on human-centred approaches and elaborated on their relevance as a methodological framework for advancing sustainability, which formed part of the research conceptual framework for this study.

In Chapter 4 Activity Theory was employed as the presentation tool for discussing the research method used in this study. The sources of data, the data gathering tools and the participants that were used in this research were all presented with the aid of Activity Theory. The essence of using Activity Theory for presenting the research paradigm and method was based on the idea that the research method consists of activities, which can be well captured through the lens of Activity Theory. Thus, the usage of Activity Theory helped to elucidate the relationships among the various units harmoniously in the data-gathering processes. The sample site was Asafo in Ghana. The selected samples were 4 graphic design firms, 30 graphic designers, 15 creative directors, 30 clients and 30 graphic design products. All were selected purposively.

The research method was based on the research philosophy, which was grounded in interpretivism, thus the ontology was relativism and the epistemology was subjectivism. The research method was qualitative and the research design was exploratory. The data gathering approaches and tools were derived from three selected human-centred approaches (empathic, contextual and ethnographic) that were in line with the aim of the research. However, only the data gathering stages of these approaches were used in the research. The central approach used, around which the other two approaches revolved, was ethnography. An interview guide, document review and observational protocols were the data gathering tools used for the study. In using observation as a process and a tool, three stages were observed with the aim of ensuring the in-depth gathering of validated data. In

the case of the interview, there were two approaches which were employed; on-site interview and off-site interview. The on-site interviews were face-to-face while the off-site were both face-to-face and WhatsApp voice note interviews. The interview approaches adopted in the data gathering were for the convenience of the interviewees.

In the space of validating the gathered data, member-checking was used along with verbatim quotes to ensure that the data was not altered but captured as received from the interviewees. In gathering the data, ethics relating to the informants and the researcher were observed to ensure the privacy of interviewees, protection, authenticity and validity of the gathered data. The research findings were analysed and assessed through the lens of sustainability and discussed with the aid of Activity Theory. The essence was to sift the challenges to sustainability in graphic design practices as well as the emerging local sustainable graphic design practices countering solutions to the challenges to sustainability in the graphic design practices at Asafo in Kumasi, Ghana.

Chapter 5 presented the findings regarding the research based on the research questions posed in this study. The three key questions had sub-questions, which were captured directly under them and these reflected in the presentation of the findings. The findings on the graphic design practices were categorised into the various units of Activity Theory and analysed. The analysed data was then assessed through the Sustainability Development Analytical Grid for challenges and solutions from a sustainability perspective. With reference to how graphic design practices are carried out, these were the findings based on the Activity Theory:

- *Subjects:* The findings on the graphic designers as the subject of the Activity Theory were on the mind-set for engagement in graphic design practices. The findings showed that graphic designers were driven by two major trajectories, which were motivation and education. Though their motivation and formal education did not reflect sustainability practices, they were engaged in a form of sustainability practices, which were as a result of personal ethics and regulations from the Ghana Food and Drugs Authority and Environmental Protection Agency. Thus a form of societal responsibility and environmental consciousness were traced. This implies that graphic designers have already started a form of sustainability practices and therefore advancing the cause of sustainability will not be difficult.

- *Tools:* The tools consisted of physical materials, skills and knowledge for graphic designing. The skills and knowledge were considered as intangible, which consisted of graphic designing and design application usage skills, factors for selection of the materials and tools and factors considered in the selection of production plan. The

design skills and knowledge focused on good layout and colour combinations, communicative abilities of text and design aesthetics with quality finishing. The selection of materials and tools were also governed by the purpose of design, clients' preferences, cost and quality of materials and graphic design firm's standards. Most of the by-products from the graphic design activities were reused or recycled into other products, which meant less negative environmental impact.

- In the *rule* unit, the facets that were discovered were personal ethics, institutional standards which consisted of Food and Drugs Authority guidelines and Environmental Protection Agency standards. These institutional guidelines are to help ensure sanity and standards of designs for the society's safety by ensuring that the contents of the graphic design products were regulated, which was the situation in most cases.

- The *activity, community and division of labour* units: The interactions among the units happened within three spaces, which were pre-press, press and post-press. The prepress consisted of:
    - Clients interaction with graphic designers during design briefing and the actual designing of the graphic product
    - Factors considered during designing
    - Colour separation with an image-setter
    - Platemaking and disposal of films

  The press was also made of printing of the graphic design work with an offset printing machine while the post-press handled issues of trimming, binding, lamination or ultra-violet coating. The major waste materials form this section were spoilt printed sheets from test prints, machine error or poor and offset printing ink residue. Under the post-press, the wastes were offcuts and trimmed papers which were bought for egg crates, toilet rolls and recycled papers.

- In the space of the *object* unit, the graphic design products were aesthetically pleasing with high potential for economic viability. The *outcome* unit was in five-fold. The first was physical benefits from the graphic design products in the societal and economic contexts, followed by the by-product effects from the graphic design practices from a sustainability perspective on the society, environment and economy. It also enveloped the experience acquisition among the community of actors through engagement in graphic design practices. The after use consequences from the graphic design products was also captured under this unit.

- The last bit encapsulates the *developments* in the units which centred on disruptive technological innovations to the graphic design profession posing challenges to traditionally oriented graphic designers and gradually pushing them out of business. However, there were expansive circles around disruptive technological advances. Some design firms used social media and open-source design applications for the dissemination of graphic design products that have helped most graphic design firms to stay relevant in the design industry.

In answering questions: (*What are the challenges to sustainability in graphic design practices? and What are the emerging design interventions developed to counter the challenges to sustainability in graphic design practices?)* the findings through the lens of the Sustainability Development Analytical Grid showed the following outcomes in the respective three dimensions of sustainability. Under the environment, the indicators selected and used in the research were renewable and non-renewable resources, the output from human activities and pollutants. Under the *renewable resources*, the commonly used material was paper in many different forms. Paper is obtained from plant, which is a natural resource which is renewable and thus most of the plants used for paper are not only from the virgin forest but are also from human-cultivated plants which helps to reduce deforestation. In the aspect of the non-renewable resources, the lithographic plates used were used for other purposes as well after they have been used for printing. In the case of the *output from human activities* from graphic design practices perspective, spoilt printed sheets from test prints and offset printing errors, offset printing ink residues, 'offcuts' and strip-trimmed papers used offset printing plates and films were the major outputs. However, some were recycled into other products. For instance, most of the strip-trimmed papers were bought for conversion into egg crates, toilet rolls and packaging boxes. In the case of reuse and repurpose, some of the offcuts papers were used for printing other works within the size of the 'offcut' papers. In repurposing, paper cartridge boxes and packages were used for notebook coverings or the notebook hardcovers. In the space of *pollutants*, the ink residues after printing were dumped in gutters that join streams. Others buried the ink residues to avoid polluting water bodies. These telling examples of various graphic design activities show that environmental consciousness in graphic design is improving in graphic design practices.

In the social dimension, these were the findings in the graphic design practices based on the indicators used, which were *healthy, safety/security, education, freedom and individual integration*. The health and safety indicators were combined. Under these indicators in the graphic design practices, the Food and Drugs Authority had policies that regulated the content of the graphic design products to ensure that the society is not exploited by

companies through the graphic designers with false information or provide incomplete information especially in the case of packages and labels that were health-related. However, there were some graphic designers who did not comply with the design policies or regulations by the Ghana Food and Drugs Authority, which also managed to track some of such products on the market and sanctioned the responsible companies. In the aspect of the graphic designers' health, the usage of petrol and kerosene for cleaning the offset printing machine cylinders was revealing but a disturbing fact because it posed breathing challenges to the machines manners that were in the value chain of the graphic design production. In the aspect of *education*, the graphic designers were very active in terms of current design trends and the skills upgrade for graphic design applications through leveraging YouTube as a self-learning tool. Education on sustainability minimal, however, the graphic design community has already started practising sustainability based on their environmental and social responsibility. Regarding individual integration, the graphic designers mostly shared ideas on projects and in the usage of graphic design software showing their understanding for the need for collaboration to achieve the best in terms of design with just a few having the fear to share ideas due to competition. In the aspect of freedom it was noticed that some graphic designers were allowed to express their creativity and some were controlled by the clients and the creative directors. In the sub-dimension of governance, decision-making in terms of the control agencies involving the graphic designers in matters relating to set standards for ensuring compliance to environmental and social responsibility was not done. However, in terms of monitoring and evaluation of the graphic design works, the control agencies did their jobs very well to ensure that the designs meet the set standards. In the sub-dimension of ethics, some of the designers were environmentally and socially responsible in their practices. Apart from this, most designers worked peacefully with their clients and creative directors. Most graphic designers with the help of their clients followed the ethical procedures set by the control agencies. In the aspect of culture, the cultural values of peace, sharing, benevolence manifested in the graphic design practices. In the case of cultural diversity in terms of graphic design practices, there were different approaches used by different graphic designers due to their personal experiences and the zeal to reduce unnecessary production cost and innovative approaches.

In the economic domain, *quality goods/services, responsible consumption and production* and *financial viability* were the indicators used. Regarding *quality goods/services,* the graphic design products were aesthetically pleasing and the materials were of the required quality. The communication contents were also clear and easily comprehensible. In terms of *responsible consumption, production and financial viability,* the graphic designers were conscious of profit so they managed the paper usage, used paper box packages and even "offcuts' for graphic design products to ensure the economic viability of the graphic design

practices. The common challenges were grammatical errors and few poor printing faults due to lack of skills from the offset printing machine minders. These challenges were those that caused the deficit to some graphic design firms.

Though there were some challenges identified in the graphic design practices form a developing or minority world context through the lens of Sustainable Development Analytical Grid, it is however also clear that sustainability practices have advanced in Ghana as a developing country though they are not practising the mainstreamed global approaches but have managed to produce their own approaches for engaging in the global sustainability concept from a local perspective as captured in Chapter 6 in Table 6.2 under the cosmopolitan localised solutions.

Chapter 6 discussed the findings from the graphic design practices through the Activity Theory and Sustainability Analytical Grid and established that the emerging sustainable graphic design solutions were made possible through cosmopolitan localism. It was further proposed in the chapter that there was a need for re-conceptualisation of sustainable graphic design practices based on the innovative solutions that were identified in some graphic design firms. This was to serve as a platform for engagement by other local graphic design firms in sustainability practices. Chapter 7 pinpointed the challenges associated with how sustainability has been framed currently and advances the concept of cosmopolitan localism as an approach for practising sustainable graphic design that embraces the dimensions of the Sustainability Development Analytical Grid for contextual innovations towards sustainable futures.

8.2 Reflections on the contribution of the study

This section discusses reflections on the research as contributions of the study. The reflections are done in four key areas of the research, which are: methodological contribution, theoretical contribution (conceptual framework contribution), knowledge and practical contributions. The key areas are elaborated in the next sections.

8.2.1 Methodological contribution

The research method was driven by interpretivism based on the aim of the study, which led to the selection of human-centred approaches for exploring and examining graphic design practices. Out of the six human-centred approaches, only empathic, contextual and ethnographic approaches were selected because these tools generally brought the researcher close to the users being studied within their working space for a deeper understanding of their practices (Steen, 2011:48). Since the aim of the research was not to develop an intervention but to explore and examine graphic design practices through the

lens of sustainability, only the exploratory phases of the selected human-centred approaches were leveraged.

Based on the research paradigm and the aim of the research, the research method selected was qualitative and the design was exploratory. The usage of the Sustainability Development Analytical Grid cum Activity Theory for setting the interview questions was an innovative approach that made the interview on the graphic design activities simple. The procedure for the data gathering was interview, observation and document review.

- The interview procedure consisted of offsite preparation, on-site/field interview and post-interview. The outstanding component of the interview was the usage of WhatsApp voice note for conducting the interview for busy graphic designers who responded at their own convenience. Another aspect of the interview I found important as a contribution was the differences I recognised with the off-site interview and on-site interview. The on-site interview gave the interviewee the ability to use the needed items around him or her within the design firm to explain his /her responses to interview questions clearly as compared to the interviews held off-site. Member checking as part of the post-interview activities was so relevant for ensuring the validity and authenticity of the recorded and written interviews.
- Under the observation, the usage of the observational protocol helped to determine the path of the observation, which helped in the avoidance of detours. The participant observation adopted helped me to experience every aspect of the graphic designers' activities which would be difficult to understand if only an interview was done from an interpretivist perspective.
- In the case of the documents review, the usage of four people for assessing the selected graphic design products made it possible to check bias because the documented facts on the graphic design products from the four individuals were all discussed before being approved by the four people.

The human-centred approaches selected helped in uncovering the various mind-set and the underlining triggers of the activities of the graphic designers that influenced their practices in a developing nation’s perspective, however, there were similarities based on the common groups as supported by Barbara and Chilisa (2012:10) that reality is socially constructed and could be individual or group generated. Thus there were common themes that surfaced during the thematic analysis. It is therefore clear that not all tools within the approaches in the human-centred design should be necessarily used but they can be selected based on the aim of the research.

8.2.2 Theoretical contribution: framework development

The research makes a specific contribution to fill the gap regarding the lack of a standard framework in the discourse of sustainability in graphic design as deduced from the literature review in Chapter 2. This research, therefore, attempted to fill the gap by adopting and applying the Sustainable Development Analytical Grid to graphic design practices through exploration and assessment. The essence was to establish a platform to advance academic discussions on graphic design's role in sustainability and how sustainability can be incorporated holistically in graphic design to move beyond the accepted notion of eco-consciousness in graphic design as sustainability.

The application of the Sustainability Development Analytical Grid was done through allocating the indicators in the environment, society and economy to a respective unit in the Activity Theory which conforms to the indicators based on the nature of the unit as shown in Chapter 3 Figure 3.8. The outcome showed that graphic design practices from a pragmatic perspective (graphic design production and design influence on the audience) connect to sustainability through the interplay of environmental, societal and economic dimensions and therefore the economic and societal dimensions should be included in any sustainable graphic design discourse. The combination of the Sustainability Development Analytical Grid and the Activity Theory lead to a proposed adjustable framework called *Adjustable SDAGAT* for assessing and exploring graphic design practices, which is presented in Figure 8.0. The adjustment in the framework means that the allocation of the indicators in the three dimensions in the Sustainability Development Analytical Grid may vary based on the nature of the graphic design activity.

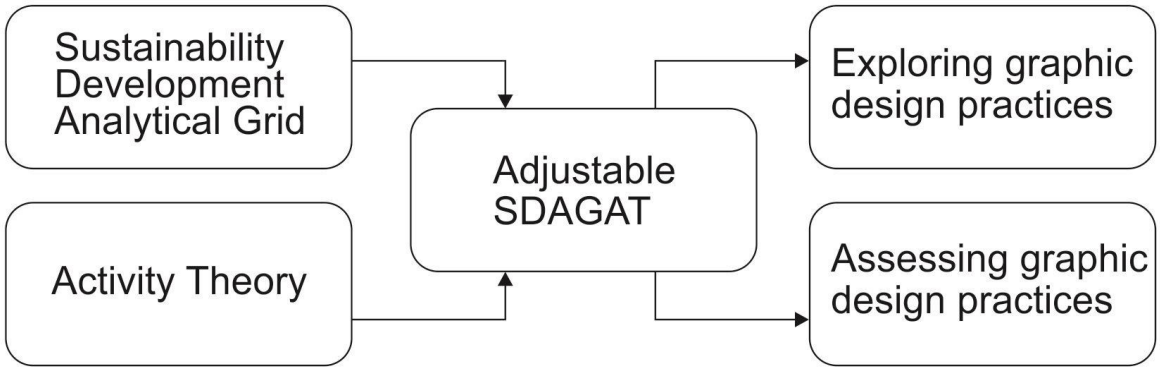

Figure 8.0: *Adjustable SDAGAT* for assessing and exploring graphic design practices (Author's construct, 2019)

8.2.3 Theoretical contribution: interpretivism, cosmopolitan localism and reconceptualised sustainable graphic design practices

The exploration of graphic design practices was done through interpretivism because I believe that knowledge is socially constructed and therefore social truth is subjective and therefore lies within human experiences (Bagele & Kawulich, 2012:10). It is therefore clear that, if the truth is subjective and is socially constructed, then the approach of using interpretivism was accurate in exploring graphic design practices in order to know how the graphic designers carried out their design responsibility within their design firms. From the epistemological interpretivist perspective, valid knowledge is culturally and historically bound (Bagele & Kawulich, 2012:10). Therefore, social realities are governed by times, cultural backgrounds and circumstances (Saunders, Lewis & Thornhill, 2008:140) and shape the experiences accumulated by social actors.

The experiences are therefore contextualised, which gives birth to contextualised innovations and creativity in minimising sustainable challenges through an open and connected community. This implies that the possibility of mainstreaming a theory or a concept is likely to encounter adaptation challenges based on context differences. This probably accounts for why there are so many proposed solutions for practising sustainability but little has been done so far. It was therefore appropriate for advancing cosmopolitan localism, which is context-oriented as a way for developing sustainable graphic design practices based on local context while embracing foreign concepts.

Based on interpretivism and its established connectedness to cosmopolitan localism, it was a necessity to reconceptualise sustainable graphic design practices to include the societal and economic dimensions and also to propose a dynamically contextualised framework for the practice of sustainable graphic design practices as captured in Chapter 7 Figure 7.5.

8.2.4 Knowledge contribution

This section elaborates on the contribution to knowledge from two angles; knowledge contribution based on a review of the current literature on graphic design and sustainability and the knowledge contribution from the findings of the research.

8.2.4.1 Knowledge contribution: synthesis from a literature review on the current state of graphic design and sustainability

Chapter 2 reviewed the journey of graphic design and sustainability for the past decade and brought out the inherent challenges to sustainability in graphic design practices which has been captured in Chapter 2 Figure 2.4. The current state regarding the discourse on

sustainable graphic design presumably gave the platform for further studies. However, the presumption could not be advanced due to the fact that the review showed that most the discourse on sustainable graphic design revolved around environmental consciousness making it difficult to advance the discourse on sustainability and graphic design. Moreover, the majority of the discourse had its root outside the developing nation's context. The synthesis, therefore, showed that sustainability in graphic design practices needed to include the societal and economic dimensions missing in the current sustainable graphic design practices.

8.2.4.2 Knowledge contribution: synthesis from the research findings

Based on the findings it was established that the design decisions of graphic designers supported by the clients and the creative directors affect the production processes and for that matter have a connection to sustainability. Thus, it implies that graphic design practices could be viewed from environmental, societal economic dimensions to check for conformity to sustainability. As part of the findings in Chapter 5, since sustainability is more related to design decisions, which is largely influenced by the mind-set, the mind-set of the graphic designers were explored. It was noticed that education and motivations were the two key factors that influenced the graphic designers' mind-set. However, it was noticed that some of the graphic designers engaged in environmental conscious designs, checked design effect on the society while still being economically conscious, which was not in their education or motivations. Thus, the graphic designers' engagements in the sustainability-related practices were as a result of regulation from Ghana Food and Drugs Authority and Environmental Protection Agencies. These regulations were to check the graphic design protects effects on society and the environment. The findings also showed that the graphic designers' design application skills were current which influenced the economic viability of the graphic design products produced.

Some waste chemicals from the graphic design production activities were bought and reused by jewellers for processing jewels; used offset printing plates were converted into cooking pots and aluminium spoons, waste boxes were used for notebook coverings, paper 'offcuts' were reused for printing other works, stripped trimmed papers were converted into toilet rolls, other and other products. These come with economic benefits and also reduce the environmental impact of waste. Some graphic designers also adopted new technologies such as social media, computer management applications and website for dissemination of graphic design works, which also helped to reduce papers usage and reduce environmental degradation caused by paper usage. However, there were few challenges with disposal of waste ink and the usage of petrol for washing offset printing machines, which need to be minimised through design interventions. These emerging design interventions, therefore,

influence the design decisions of the graphic designers and thus help promote sustainability form a local context. These emerging design interventions also show that solutions to global challenges can be tackled from local perspectives with local technologies and thus organisations promoting sustainability should be mindful of such interventions that need to be fuelled to enable the locals to also contribute their quota towards sustainable futures.

On the level of practical contribution, the research findings and the framework developed have been presented at conferences and also published in Design and Culture Journal (link to publication: https://doi.org/10.1080/17547075.2020.1694263).

8.3 Limitations and recommendations for further research

In this chapter, there has been a list of anticipated contributions that have been discussed however, there were some limitations in this study. The limitations were the scope of the study, the elimination of some of the indicators in the Sustainability Development Analytical Grid, the usage of only the exploratory phase of the selected human-centred design approaches and the graphic design practices.

1. The scope of the study covered the research site and the sample sizes. The research site was Asafo, a suburb of Kumasi from which the graphic design firms were selected. As at the time the research commenced, Ghana had ten regions. Asafo is a suburb in Kumasi, which is also in Ashanti region. Comparing Asafo to the size of Ghana, the conclusion from the research cannot be generalised. It is therefore recommended that duplication studies are done in the other regions of Ghana for a nationwide reflection of graphic design practices through the lens of sustainability.
2. The Sustainability Development Analytical Grid was used for exploring and assessing the graphic design practices at Asafo. However, it had six dimensions which were ethics, social, ecological, cultural, economic and governance but were re-configured into three dimensions namely economy, environment and society. The ethics, governance and culture were put under the social dimensions as sub-dimensions for easy presentation. The three dimensions also had indicators for assessment but some of the indicators were eliminated because they were directly connected to graphic design practices. For instance wealth creation and PSPP integration had nothing to do with graphic design practices hence their elimination. Others such as biodiversity, land use and wealth sharing as indicated in Table 3.0 were not directly applicable to graphic design practices. I, therefore, recommend that further research can be conducted to test for applicability for the eliminated indicators before a justified conclusion can be drawn about their exclusion for assessing sustainable graphic design practices.

3. The human-centred approaches adopted for the study were empathic, contextual and ethnographic approaches. In all these approaches, only the first phases of the selected approaches were used because the aim of the research was to explore and assess and not to develop. Looking at the design interventions by the graphic design firms, there is a need to organise a workshop that will diffuse the design intervention while refining them for easy applicability by others who are having challenges to sustainability in their graphic design practices.
4. Another limitation in this research was the exploring and assessing of only the pragmatic graphic design practices approach, which covered the graphic designers' design decisions and designs effect on graphic design production and the influence of the design on people. It did not cover the aspects of rhetoric and semantics in graphic design practices. Researchers can, therefore, explore the connections among sustainability, rhetoric and semantics in graphic design practices.

8.4 Recommendations

The recommendations, based on the findings of this research are three-fold; recommendation for policy, graphic design educators and researchers and graphic design practitioners.

8.4.1 Recommendations for policy

Sustainability has become integral for every discipline to engage in their practices as a means of contributing to the worldwide Sustainable Development Goals attainment.

1. Based on the research findings it is possible for every designer to practice sustainability and therefore the government of Ghana should enact policies that enforce the integration of sustainability in graphic design practices nationwide to compel all graphic designers to comply with the status quo.
2. The government of Ghana should also enact policies that regulate the importation of printing materials to ensure that the materials that come into the country are sustainability sound.
3. The Ghana education service should also recognise the need for them to instigate a policy that enforces the integration of sustainability subjects in design courses in the second cycle and tertiary education to whip up the interest of students to understand the dangers associated with not practising sustainability and the benefits associated with it.
4. The government should also enact a policy that gives the Ghana Food and Drugs Authority and the Environmental Protection Agencies the power to organise

workshops on their regulations that graphic designers have to adhere to in their practices.

8.4.2 Recommendations for design education

Design education is advanced largely by design educators. Design educators should, therefore, adhere to the following recommendations:

1. Design educators should explore different means of teaching sustainability with the right sustainability framework and shy away from the concept of the three circles which are used to represent the triple-bottom-line because it looks vague without the appropriate indicators. I, therefore, propose that this thesis has attempted to lay the foundation by applying the Sustainability Development Analytical Grid and therefore design educators can try applying this framework to advance teaching on sustainability.
2. Design educators should also teach sustainability that makes it relevant as a subject of concern and unavoidable in design disciplines, especially in graphic design.
3. From a cosmopolitan localism perspective, based on the findings it is clear that there are a number of design interventions emerging that factors in sustainability holistically. Design educators and students do not need to re-invent the wheel. They should collaborate with the industrial players to learn from them and modify them for their lessons. This will introduce the students to innovations that are already invoked in the design industry giving the students the upper hand to practice sustainability from an industrial point of view.

8.4.3 Recommendations for graphic design practitioners

Graphic designers, clients and creative directors are key players as far as sustainability integration in graphic design activities is concerned.

1. Graphic designers, clients and creative directors should embrace the regulations form the Ghana Food and Drugs Authority and the Environmental Protection Agency and adhere to them religiously to ensure environmental and social consciousness.
2. Graphic designers and their creative directors should be aware that their design decisions have an effect on sustainability and thus should collaborate with educators to know how to handle sustainability challenges in graphic design. Some graphic designers or even their press houses have engaged in practices that factor sustainability without any form of education on sustainability. In such a situation those who are aware should educate those who are not aware but engaged in sustainability, to continue and expand.

3. Graphic designers should create associations that promote sustainability practices from local context making sustainability an open-ended concept that everybody can engage in different ways to achieve a sustainable outcome.

Finally, graphic designers have a major role to play in integrating sustainability in their graphic design practices because they are at the centre of design decisions and therefore whatever they decide design-wise affect society, the environment and the economy. Graphic designers should, therefore, avoid the limited mind-set that their responsibility ends at the manipulation of semantic and rhetoric components in graphic design. Rather, they ought to recognise that their responsibility from a sustainability perspective extends to envelop graphic design production and the effects of the designed product on society. Graphic designers thus have a greater responsibility to the world than they envisage and should embrace it whole-heartedly, leveraging their developed creative skills as a tool for advancing sustainability in their practices.

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APPENDICES

APPENDIX A: Sample of the informed consent form for design firms

Study Title: Design interventions for re-conceptualising sustainable graphic design practices

Investigator: Ginn Bonsu Assibey, *Doctoral Candidate*

Ginn Bonsu Assibey is a doctoral candidate studying **the challenges to sustainability in graphic design practices and emerging-design interventions for sustainable graphic design practices in a developing nation.** Although the study will not benefit you directly, it will provide information that might enable creative directors and graphic designers to practice sustainability with the aid of a workshop. It might also enable design educators to factor local emerging sustainable design solutions into their curriculum. It may help policy planners to create policies that will create a complying environment for the practice of holistic sustainability in design disciplines as well as other disciplines.

The study supervisors and other appropriate authorities at the Cape Peninsula University of Technology (CPUT), in the Western Cape Province, have approved the study and its procedures. The study procedures involve no foreseeable risk or harm to you. The procedures include:

1. interview and
2. participant observation

The entire study will take approximately 2 months in the case of the participant observation.

Please feel free to ask any questions about the study or about your graphic design firm's participation. You may call or WhatsApp me via +233 (0) 555 397 409 if you have further questions.

Your firm's participation in this study is voluntary; you are under no obligation to participate and you have the right to withdraw at any time should you choose to do so.

The study data will be coded so they will not be linked to your firm's name. Your firm's identity will not be revealed while the study is being conducted or when the study is reported or published unless you give explicit consent for the same. To ensure anonymity and confidentiality, all study data will be collected by only the researcher, stored in a secure place, and not shared with any other person without your permission.

I have read this consent form and voluntarily consent to participate in the study:

Signature of firm's CEO /Manager _____ Date:_____

Signature of Witness_____ Date:_____

I have explained this study to the above subject and have sought his/her understanding for informed consent:

Signature of Investigator_____ Date:_____

APPENDIX B: Sample of the informed consent form for interview

Study Title: Design interventions for re-conceptualising sustainable graphic design practices

Investigator: Ginn Bonsu Assibey, *Doctoral Candidate*

Ginn Bonsu Assibey is a doctoral candidate studying **the challenges to sustainability in graphic design practices and emerging-design interventions for sustainable graphic design practices in a developing nation.** Although the study will not benefit you directly, it will provide information that might enable creative directors and graphic designers to practice sustainability with the aid of a workshop. It might also enable design educators to factor local emerging sustainable design solutions into their curriculum. It may help policy planners to create policies that will create a complying environment for the practice of holistic sustainability in design disciplines as well as other disciplines.

The study supervisors and other appropriate authorities at the Cape Peninsula University of Technology (CPUT), in the Western Cape Province, have approved the study and its procedures. The study procedures involve no foreseeable risk or harm to you. The procedures include depending on your work schedule:

1. face-to-face interview onsite;
2. face-to-face interview offsite or
3. WhatsApp voice-note interview

Participation in this study will take approximately 55 minutes of your time.

Please feel free to ask any questions about the study or about being a participant/informant and you may call or WhatsApp me via +233 (0) 555 397 409 if you have further questions.

Your participation in this study is voluntary; you are under no obligation to participate and you have the right to withdraw at any time should you choose to do so.

The study data will be coded so they will not be linked to your name. Your identity will not be revealed while the study is being conducted or when the study is reported or published unless you give explicit consent for the same. To ensure anonymity and confidentiality, all study data will be collected by only the researcher, stored in a secure place, and not shared with any other person without your permission.

I have read this consent form and voluntarily consent to participate in the study:

Signature of Participant/Informant _____ Date:_____

Signature of Witness_____ Date:_____

I have explained this study to the above subject and have sought his/her understanding for informed consent:

Signature of Investigator_____ Date:_____

APPENDIX C: Sample interview guide for graphic designers

INTERVIEW GUIDE FOR INTERVIEWING GRAPHIC DESIGNERS

Study Title:

Design interventions for re-conceptualising sustainable graphic design practices

1. What are your motivations as a graphic designer? Is it for economic factors or as social responsibility?
2. What is your knowledge about your works effect on the environment, society and the economy?
3. What is your knowledge about the need to consider your works effect on the environment and the society while thinking about your profit or the financial viability of your design projects?
4. What are your responsibilities as a graphic designer in your firm?
5. Do you consider your production plan's effect on the environment, society (health) along with the financial viability of your projects? How?
6. What materials and tools do you use for your graphic design projects or products?
7. What factors do you consider before selecting the tool or material for your project?
8. What design application do you use and what is the output of the design application in terms of colour quality and image quality?
9. How do you oversee the production processes to ensure that the end product is your intended quality designed work your clients want?
10. What do you consider as a quality graphic designed product?
11. How do you consider your health and that of the society when choosing the production plan based on the output of the activities including the by-products? How is it done?
12. What challenges do you have in sharing ideas with the graphic designers in or outside your firm and do you collaborate with persons in the graphic design production value chain too as well? And how do you carry that out?
13. What challenges do you encounter when co-designing with your clients?
14. What makes your graphic designed products financially viable?
15. What challenges do you encounter that threatens the financial viability of your graphic design projects from a sustainability point of view?
16. What challenges do you encounter in your graphic design practices concerning the production of quality graphic designed materials or products?
17. What types of waste are generated in your graphic design production processes?
18. What causes waste of materials or resources in your production plan?
19. How do you manage the waste from your graphic design production?
20. How do you receive education on current trends of graphic design practices?
21. Are there new technologies that threaten the future viability of graphic design as a profession?

APPENDIX D: Sample interview guide for creative directors

INTERVIEW GUIDE FOR INTERVIEWING CREATIVE DIRECTORS

Study Title:

Design interventions for re-conceptualising sustainable graphic design practices

1. What are your motivations for pursuing graphic design?
2. What is your knowledge about your works effect on the environment, society and the economy?
3. What is your knowledge about the need to consider your works effect on the environment and the society while thinking about your profit or the financial viability of your design projects?
4. What materials and tools do you advice for your graphic design projects or products?
5. What factors do you consider before selecting the tool or material for your project?
6. How do you oversee the production processes to ensure that the end product is your intended designed quality work your clients want?
7. What do you consider as a quality graphic designed product?
8. How do you consider your health and that of the society when choosing the production plan based on the output of the activities including the by-products?
9. What challenges do you have in sharing ideas with the graphic designers in or outside your firm and do you collaborate with persons in the graphic design production value chain too as well? And how do you carry that out?
10. What challenges do you encounter when co-designing with your clients?
11. What makes your graphic designed products financially viable?
12. What challenges do you encounter that threatens the financial viability of your graphic design projects from a *sustainability point of view*?
13. What challenges do you encounter in your graphic design practices concerning the production of quality graphic designed materials or products?
14. What causes waste of materials or resources in your production plan?
15. What types of waste are generated in your graphic design production processes?
16. How do you manage the waste from your graphic design production?
17. How are the graphic design materials conveyed to your clients?
18. How do you provide help to your community in which you work?
19. How do you receive education on current trends of graphic design practices?
20. Are there new technologies that threaten the future viability of graphic design as a profession?

APPENDIX E: Sample interview guide for clients

INTERVIEW GUIDE FOR INTERVIEWING CLIENTS

Study Title:

Design interventions for re-conceptualising sustainable graphic design practices

1. What is your knowledge about your works effect on the environment, society and the economy?
2. What is your knowledge about the need to consider your works effect on the and the society while thinking about your profit or the financial viability of your design projects?
3. What graphic design products do you often engage the services of the graphic designer?
4. How do you select your materials for your graphic design projects?
5. How do you work with the graphic designer or the art director?
6. How do you consider the communication and the product's content of your material effects on society (health-wise)?
7. What is your idea of quality graphic design products?
8. What happens to your designed products with a short life span after their usage?

APPENDIX F: Sample graphic design product review protocol

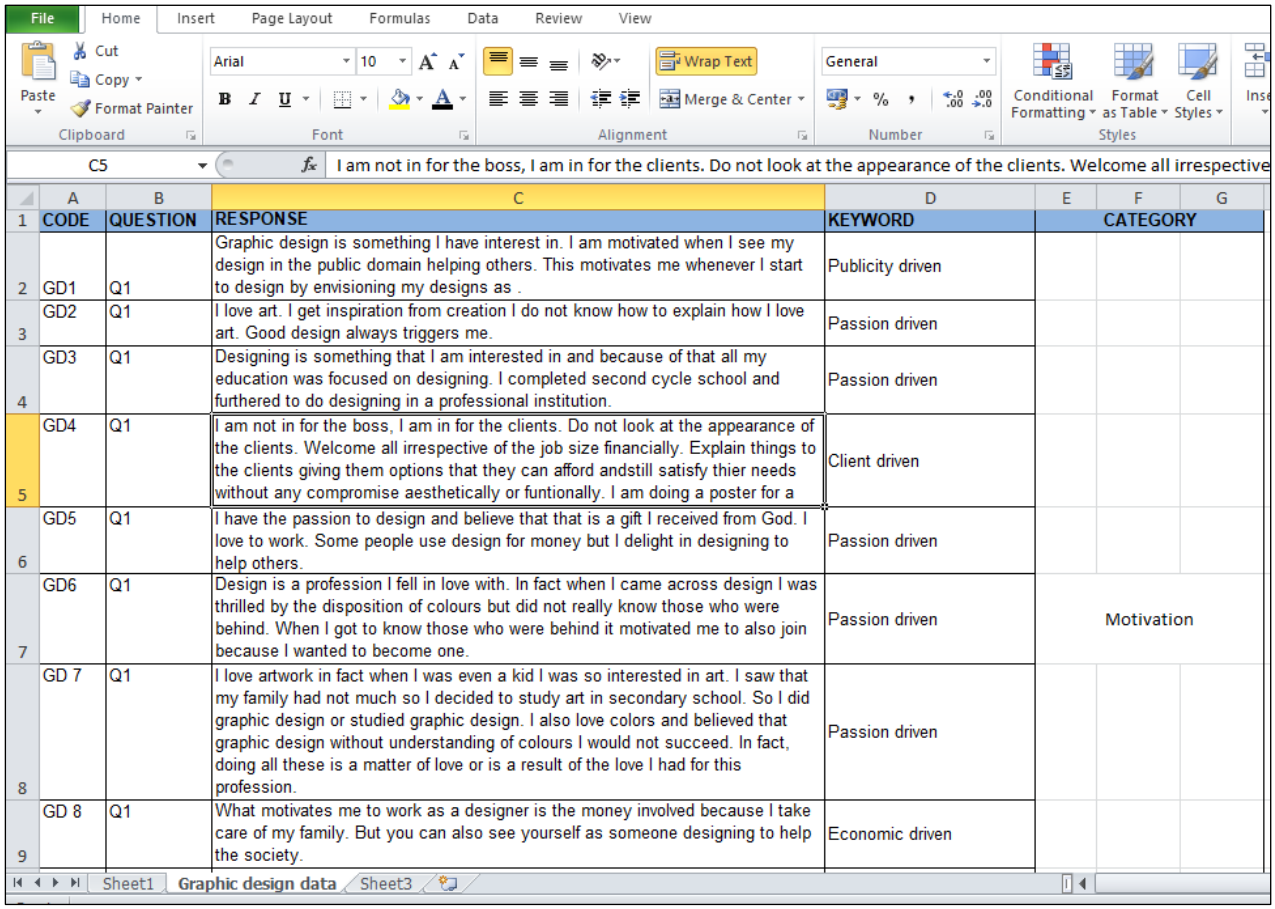
GRAPHIC DESIGN PRODUCT REVIEW PROTOCOL

Study Title:

Design interventions for re-conceptualising sustainable graphic design practices

1. What materials are the graphic designed products made of?
2. How long is the designed product supposed to last, based on the purpose of the product?
3. Are the materials used worthwhile based on the period of usage of the graphic designed product?
4. How do the ends of such graphic designed product look after their primary usage?
5. What are the possible threats the graphic designed product can pose to the environment after their usage?
6. What are the possible threats the graphic design materials pose to health and safety of the society?
    a. Is the communication content truthful?
    b. Is the product's content of the design graphic material accepted for promotion by the accredited offices?
7. Are the products of expected quality per the purposes of the graphic designed product?
8. Are the graphic designs aesthetically pleasing and viable economically?

APPENDIX G: Sample coding sheet in Microsoft Excel



File Home Insert Page Layout Formulas Data Review View

Cut Copy Format Painter Paste Clipboard

Arial 10 Font

Wrap Text Merge & Center Alignment

General Number

Conditional Formatting Format as Table Cell Styles Styles

C5 fx I am not in for the boss, I am in for the clients. Do not look at the appearance of the clients. Welcome all irrespective

	A	B	C	D	E	F	G
1	CODE	QUESTION	RESPONSE	KEYWORD		CATEGORY	
2	GD1	Q1	Graphic design is something I have interest in. I am motivated when I see my design in the public domain helping others. This motivates me whenever I start to design by envisioning my designs as .	Publicity driven			
3	GD2	Q1	I love art. I get inspiration from creation I do not know how to explain how I love art. Good design always triggers me.	Passion driven			
4	GD3	Q1	Designing is something that I am interested in and because of that all my education was focused on designing. I completed second cycle school and furthered to do designing in a professional institution.	Passion driven			
5	GD4	Q1	I am not in for the boss, I am in for the clients. Do not look at the appearance of the clients. Welcome all irrespective of the job size financially. Explain things to the clients giving them options that they can afford andstill satisfy thier needs without any compromise aesthetically or funtionally. I am doing a poster for a	Client driven			
6	GD5	Q1	I have the passion to design and believe that that is a gift I received from God. I love to work. Some people use design for money but I delight in designing to help others.	Passion driven			
7	GD6	Q1	Design is a profession I fell in love with. In fact when I came across design I was thrilled by the disposition of colours but did not really know those who were behind. When I got to know those who were behind it motivated me to also join because I wanted to become one.	Passion driven		Motivation	
8	GD 7	Q1	I love artwork in fact when I was even a kid I was so interested in art. I saw that my family had not much so I decided to study art in secondary school. So I did graphic design or studied graphic design. I also love colors and believed that graphic design without understanding of colours I would not succeed. In fact, doing all these is a matter of love or is a result of the love I had for this profession.	Passion driven			
9	GD 8	Q1	What motivates me to work as a designer is the money involved because I take care of my family. But you can also see yourself as someone designing to help the society.	Economic driven			

Sheet1 Graphic design data Sheet3